Access DB# 48530

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: DAWN GARRETT Examiner #: 76157 Date: 8/8/2001
Art Unit: 1774 Phone Number 305-0788 Serial Number: 09/547 415
Mail Box and Bldg/Room Location: Maibox 11D03 Results Format Preferred (circle): PAPER DISK E-MAIL
Crystal Plaza 3 Room # 11D30
If mor than one search is submitted, please prioritize searches in order of need.
****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Full color display structures using pseudomorphic cladding quantum dot nanophosphor thin films
Inventors (please provide full names):
Faquir C. Jain and Fotios Papadimitrakopoulos
Earliest Priority Filing Date: 4/11/2000

For Sequence Searches Only *Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Please search claim 1 (attached)
And the specific layers of claims 3 and 5

NOTE:
If you need speak to me regarding the search, feel free to give me a call.
Thank
DB

****

STAFF USE ONLY	Type of Search		Vendors and cost where applicable	
Searcher: DB	NA Sequence (#)		STN	✓
Searcher Phone #: X-4139	AA Sequence (#)		Dialog	
Searcher Location: EIC 1700	Structure (#)	Reg #(2)	Questel/Orbit	
Date Searcher Picked Up:	Bibliographic	✓	Dr.Link	
Date Completed: 8-13-01	Litigation		Lexis/Nexis	
Searcher Prep & Review Time: 45	Fulltext		Sequence Systems	
Clerical Prep Time: 12	Patent Family		WWW/Internet	
Online Time: 75	Other		Other (specify)	

PTO-1590 (1-2000)

L7	1120	SEA FILE=REGISTRY ABB=ON PLU=ON (ZN(L)SE)/ELS AND (CD OR MG OR BE OR S) (L) 3-7/ELC.SUB
L9	779	SEA FILE=REGISTRY ABB=ON PLU=ON (GA(L)N)/ELS AND (IN OR AL) AND 2-8/ELC.SUB
L13	18531	SEA FILE=REGISTRY ABB=ON PLU=ON ZN(L)(S OR SE OR MG OR CD OR BE)/ELS AND 3-6/ELC.SUB
L14	9750	SEA FILE=REGISTRY ABB=ON PLU=ON ZN(L)(S OR SE OR MG OR CD OR BE)/ELS AND 3-4/ELC.SUB
L16	3094	SEA FILE=REGISTRY ABB=ON PLU=ON L14 AND (SE OR S)/ELS
L19	64	SEA FILE=REGISTRY ABB=ON PLU=ON (AL(L)IN(L)N)/ELS AND 3/ELC
L20	4515	SEA FILE=HCAPLUS ABB=ON PLU=ON (ELECTROLUMIN? OR EL) (L) SEMICONDUCT?
L22	8916	SEA FILE=HCAPLUS ABB=ON PLU=ON L7 OR L9
L23	29111	SEA FILE=HCAPLUS ABB=ON PLU=ON L13
L24	15460	SEA FILE=HCAPLUS ABB=ON PLU=ON L16 OR L19
L26	249	SEA FILE=HCAPLUS ABB=ON PLU=ON L20 AND INSULATOR?
L27	13	SEA FILE=HCAPLUS ABB=ON PLU=ON L26 AND (L22 OR L23 OR L24)

L27 ANSWER 1 OF 13 HCAPLUS COPYRIGHT 2001 ACS
AN 2000:824580 HCAPLUS
DN 134:11540
TI Electroluminescent laminate with patterned phosphor structure and thick film dielectric with improved dielectric properties
IN Wu, Xingwei; Seale, Daniel Joseph; Liu, Guo; Carkner, Donald Edward; Doxsee, Daniel; Kupsky, George A.; Westcott, Michael Roger; Lovell, David Robin
PA Ifire Technology Inc., Can.
SO PCT Int. Appl., 95 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM H05B033-14
ICS H05B033-12; H05B033-10; H05B033-22
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 49, 73, 76
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2000070917	A1	20001123	WO 2000-CA561	20000512

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRAI US 1999-134299 P 19990514
US 2000-540288 A 20000331

AB Patterned phosphor structure having red, green, and blue sub-pixel phosphor elements for a.c. electroluminescent displays are described which comprise at least a first and a second phosphor, each emitting light in different ranges of the visible spectrum, but whose combined emission spectra contains red, green, and blue light in a layer, arranged in adjacent repeating relationship to each other to provide a plurality of repeating phosphor deposits; and .gtoreq.1 means assocd. with .gtoreq.1 of the phosphor deposits, and which, together with the at least first and second phosphor deposits, form the sub-pixel phosphor elements, for setting and equalizing the threshold voltages of the sub-pixel phosphor elements, and for setting the relative luminosities of the sub-pixel phosphor elements so that they bear set ratios to one another at each operating modulation voltage used to generate the desired luminosities for red, green, and blue. Methods for forming the structures are described which entail selecting the phosphors, depositing and patterning the phosphor layer, providing the means for setting and equalizing the threshold voltages of the phosphors to form the sub-pixel elements, and, optionally, annealing the structure. Electroluminescent laminates comprising the patterned phosphor structures formed on a rigid substrate over a thick film dielec. layer formed from a sintered ceramic material having a dielec. const. >500, and having a thickness .gtorsim.10 .mu.m and, optionally, optical color filter means aligned with the sub-pixel elements are also described. Methods of forming the thick film dielec. layers for electroluminescent laminates are also described which entail depositing a ceramic material in .gtoreq.1 layers by a thick film technique to form a dielec. layer having a thickness of 10-300 .mu.m;

pressing the dielec. layer to form a densified layer with reduced porosity and surface roughness; and sintering the dielec. layer to form a pressed sintered dielec. layer which, in the laminates, has an improved uniform luminosity over an unpressed sintered dielec. layer of the same compn. Substrate/dielec. layer components for use in electroluminescent laminates comprising a substrate which provides a rear electrode and a densified ceramic thick film dielec. layer are also described. Methods of synthesizing strontium sulfide are described which entail providing a source of high purity strontium carbonate in a dispersed form; heating the strontium carbonate in a reactor with gradual heating up to a max. temp. of 800-1200.degree.; contacting the heated strontium carbonate with a flow of sulfur vapors formed by heating elemental sulfur in the reactor to .gtoreq.300.degree. in an inert atm.; and terminating the reaction by stopping the flow of sulfur at a point when sulfur dioxide or carbon dioxide in the reaction gas reaches an amt. which correlates with an amt. of oxygen in oxygen-contg. strontium compds. in the reaction product, which is in the range of 1-10 at.%.

ST electroluminescent laminate patterned phosphor structure; thick film densified dielec layer electroluminescent laminate; strontium sulfide prodn

IT Electric **insulators**
(ceramic; electroluminescent laminates with patterned phosphor structures and thick film densified dielec. layers and their prodn. and strontium sulfide synthesis)

IT Electroluminescent devices
Optical imaging devices
Semiconductor device fabrication
(**electroluminescent** laminates with patterned phosphor structures and thick film densified dielec. layers and their prodn. and strontium sulfide synthesis)

IT Phosphors
(electroluminescent; electroluminescent laminates with patterned phosphor structures and thick film densified dielec. layers and their prodn. and strontium sulfide synthesis)

IT Photolithography
(in patterned phosphor structure prodn. for electroluminescent laminates)

IT Molding of ceramics
(in thick film densified dielec. layers prodn.)

IT 50926-11-9, Indium tin oxide
RL: DEV (Device component use); USES (Uses)
(electroluminescent laminates with patterned phosphor structures and thick film densified dielec. layers and their prodn. and strontium sulfide synthesis)

IT 1314-96-1P, Strontium sulfide
RL: DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)
(electroluminescent laminates with patterned phosphor structures and thick film densified dielec. layers and their prodn. and strontium sulfide synthesis)

IT 7439-96-5, Manganese, processes 7440-45-1, Cerium, processes 7723-14-0, Phosphorus, processes
RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(electroluminescent laminates with patterned phosphor structures and thick film densified dielec. layers and their prodn. and strontium sulfide synthesis)

IT 1314-61-0, Tantalum oxide 1314-98-3, Zinc sulfide, processes 1344-28-1, Alumina, processes 7631-86-9, Silica, processes 11105-01-4,

Silicon oxynitride 12047-27-7, Barium titanate, processes 12055-23-1, Hafnia 12060-00-3, Lead titanate 12676-60-7, Lanthanum lead titanium zirconium oxide ((La,Pb)(Ti,Zr)O3) 37349-19-2, Lead magnesium niobate 65430-80-0, Lead magnesium niobium titanium oxide 152060-61-2, Lead zirconium titanate **176046-26-7**, Zinc magnesium sulfide (Zn0.7Mg0.3S)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(electroluminescent laminates with patterned phosphor structures and thick film densified dielec. layers and their prodn. and strontium sulfide synthesis)

IT 67-56-1, Methanol, processes 108-88-3, Toluene, processes 7647-01-0, Hydrochloric acid, processes 7664-38-2, Phosphoric acid, processes
RL: NUU (Nonbiological use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in patterned phosphor structure prodn. for electroluminescent laminates)

IT 124-38-9P, Carbon dioxide, preparation 7446-09-5P, Sulfur dioxide, preparation
RL: BYP (Byproduct); NUU (Nonbiological use, unclassified); PREP (Preparation); USES (Uses)
(in strontium sulfide synthesis)

IT 1633-05-2, Strontium carbonate 7704-34-9, Sulfur, reactions
RL: RCT (Reactant)
(in strontium sulfide synthesis)

RE.CNT 2
RE
(1) Inoguchi, K; US 5932327 A 1999 HCAPLUS
(2) Okamoto, F; JOURNAL OF THE ELECTROCHEMICAL SOCIETY 1983, V130(2), P432 HCAPLUS

IT **176046-26-7**, Zinc magnesium sulfide (Zn0.7Mg0.3S)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(electroluminescent laminates with patterned phosphor structures and thick film densified dielec. layers and their prodn. and strontium sulfide synthesis)

RN 176046-26-7 HCAPLUS
CN Magnesium zinc sulfide (Mg0.3Zn0.7S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Zn	0.7	7440-66-6
Mg	0.3	7439-95-4

L27 ANSWER 2 OF 13 HCAPLUS COPYRIGHT 2001 ACS
AN 2000:274799 HCAPLUS
DN 132:300752
TI LED
IN Okuyama, Hiroyuki; Kishima, Satoru
PA Sony Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01L033-00
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000124501	A2	20000428	JP 1998-291834	19981014

AB The LED comprises: (1) an In n electrode layer; (2) an n-GaAs substrate; and (3) an n-GaAs 1st buffer, (4) an n-GaAs 2nd buffer, (5) an n-GaAs 3rd buffer, (6) an n-ZnMgSSe cladding, (7) an n-ZnSSe guide, (8) a ZnCdSe active, (9) a p-ZnSSe guide. (10) a p-ZnMgSSe cladding, (11) a p-ZnSSe auxiliary cladding, (12) a SiO2 **insulator**, (13) a p-ZnSe intermediate, (14) a p-ZnSe/p-ZnTe superlattice, (15) a p-ZnTe contact, and (16) a Au p electrode layer, where (12) divides (13)-(16) into 4 segments (each segment < 1-3 x 104 .mu.m2) via dividing paths > 10 .mu.m wide; and (6), (8) and (10) comprise Group II-VI compds. doped with .gtoreq.1 selected from Be, Zn, Hg, Cd, Mg and .gtoreq.1 selected from O, S, Se, Te.

ST gallium arsenide zinc magnesium sulfide selenide LED

IT **Semiconductor electroluminescent** devices
Semiconductor superlattices
(LED comprising GaAs, ZnS, ZnSe, ZnTe, ZnSSe and ZnMgSSe)

IT Group IIB element chalcogenides
RL: DEV (Device component use); USES (Uses)
(LED comprising GaAs, ZnS, ZnSe, ZnTe, ZnSSe and ZnMgSSe)

IT 1303-00-0, Gallium arsenide (GaAs), uses 1315-09-9, Zinc selenide (ZnSe) 1315-11-3, Zinc telluride (ZnTe) 7440-57-5, Gold, uses 7440-74-6, Indium, uses 7631-86-9, Silica, uses **59989-74-1**, Zinc selenide sulfide (Zn(Se,S)) **107874-73-7**, Cadmium zinc selenide (CdZnSe) **113937-99-8**, Zinc selenide sulfide (ZnSe0.94S0.06) **189562-20-7**, Magnesium zinc selenide sulfide (Mg0.12Zn0.88Se0.82S0.18) **264194-78-7**, Magnesium zinc selenide sulfide (Mg0.25Zn0.75Se0.72S0.28)
RL: DEV (Device component use); USES (Uses)
(LED comprising GaAs, ZnS, ZnSe, ZnTe, ZnSSe and ZnMgSSe)

IT 7439-95-4, Magnesium, uses 7439-97-6, Mercury, uses 7440-41-7, Beryllium, uses 7440-43-9, Cadmium, uses 7440-66-6, Zinc, uses 7704-34-9, Sulfur, uses 7782-44-7, Oxygen, uses 7782-49-2, Selenium, uses 13494-80-9, Tellurium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(LED comprising GaAs, ZnS, ZnSe, ZnTe, ZnSSe and ZnMgSSe)

IT **59989-74-1**, Zinc selenide sulfide (Zn(Se,S)) **107874-73-7**, Cadmium zinc selenide (CdZnSe) **113937-99-8**, Zinc selenide sulfide (ZnSe0.94S0.06) **189562-20-7**, Magnesium zinc selenide sulfide (Mg0.12Zn0.88Se0.82S0.18) **264194-78-7**, Magnesium zinc selenide sulfide (Mg0.25Zn0.75Se0.72S0.28)
RL: DEV (Device component use); USES (Uses)
(LED comprising GaAs, ZnS, ZnSe, ZnTe, ZnSSe and ZnMgSSe)

RN 59989-74-1 HCAPLUS

CN Zinc selenide sulfide (Zn(Se,S)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	0 - 1	7782-49-2
S	0 - 1	7704-34-9
Zn	1	7440-66-6

RN 107874-73-7 HCAPLUS

CN Cadmium zinc selenide ((Cd,Zn)Se) (9CI) (CA INDEX NAME)

Component	Ratio	Component

		Registry Number
Se	1	7782-49-2
Zn	0 - 1	7440-66-6
Cd	0 - 1	7440-43-9

RN 113937-99-8 HCAPLUS
CN Zinc selenide sulfide (ZnSe0.94S0.06) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	0.94	7782-49-2
S	0.06	7704-34-9
Zn	1	7440-66-6

RN 189562-20-7 HCAPLUS
CN Magnesium zinc selenide sulfide (Mg0.12Zn0.88Se0.82S0.18) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	0.82	7782-49-2
S	0.18	7704-34-9
Zn	0.88	7440-66-6
Mg	0.12	7439-95-4

RN 264194-78-7 HCAPLUS
CN Magnesium zinc selenide sulfide (Mg0.25Zn0.75Se0.72S0.28) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	0.72	7782-49-2
S	0.28	7704-34-9
Zn	0.75	7440-66-6
Mg	0.25	7439-95-4

L27 ANSWER 3 OF 13 HCAPLUS COPYRIGHT 2001 ACS
AN 2000:130346 HCAPLUS
DN 132:173196
TI GaN semiconductor light-emitting device
IN Monden, Michio
PA Murata Mfg. Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01L033-00
ICS H01S005-30
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2000058918	A2	20000225	JP 1998-225063	19980807

AB The invention relates to a GaN-base semiconductor light-emitting device

that comprises InxGayAlzN (x+y+z = 1, 0.ltoreq.x.ltoreq.1, 0.ltoreq.y.ltoreq.1, and 0.ltoreq.z.ltoreq.1) layers stacked on an **insulator** substrate having a metal film fabricated on the substate surface in a specific pattern, such as a digitated shape.

ST aluminum gallium indium nitride LED laser

IT **Electroluminescent** devices
Semiconductor lasers
(GaN **semiconductor** light-emitting device)

IT 1314-13-2, Zinc oxide, uses 25617-97-4, Gallium nitride **106097-44-3**, Aluminum gallium nitride ((Al,Ga)N)
RL: DEV (Device component use); USES (Uses)
(GaN semiconductor light-emitting device)

IT **106097-44-3**, Aluminum gallium nitride ((Al,Ga)N)
RL: DEV (Device component use); USES (Uses)
(GaN semiconductor light-emitting device)

RN 106097-44-3 HCAPLUS

CN Aluminum gallium nitride ((Al,Ga)N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
Ga	0 - 1	7440-55-3
Al	0 - 1	7429-90-5

L27 ANSWER 4 OF 13 HCAPLUS COPYRIGHT 2001 ACS

AN 2000:116445 HCAPLUS

DN 132:158773

TI Organic electroluminescent device

IN Hosokawa, Chishio; Kusumoto, Tadashi

PA Idemitsu Kosan Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H05B033-28
ICS H05B033-14; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2000048966	A2	20000218	JP 1998-210877	19980727

AB An org. **electroluminescent** device comprises an org. layer(s) placed between a transparent electrode and a counter electrode. The transparent electrode comprises a metal thin film and either a **semiconductor** or **insulator** film in which the carrier concn. is < 1023 cm-3, and the energy gap is .gtoreq. 2.7 eV, wherein the **semiconductor** or **insulator** film is in contact with the org. layer for reducing the surface resistance of the transparent electrode.

ST org electroluminescent device transparent electrode

IT Electroluminescent devices
(org. electroluminescent device)

IT Electric contacts
(transparent electrode; org. electroluminescent device)

IT 1315-09-9, Zinc selenide 2085-33-8, Al 8q 7440-22-4, Silver, uses 7783-40-6, Magnesium fluoride 7789-24-4, Lithium fluoride, uses 12798-95-7 13463-67-7, Titanium oxide, uses **246858-96-8**,

Indium magnesium zinc oxide 246860-64-0, Indium ytterbium zinc oxide
RL: DEV (Device component use); USES (Uses)
(org. electroluminescent device)

IT **246858-96-8**, Indium magnesium zinc oxide
RL: DEV (Device component use); USES (Uses)
(org. electroluminescent device)

RN 246858-96-8 HCAPLUS

CN Indium magnesium zinc oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
In	x	7440-74-6
Zn	x	7440-66-6
Mg	x	7439-95-4

L27 ANSWER 5 OF 13 HCAPLUS COPYRIGHT 2001 ACS

AN 1999:690393 HCAPLUS

DN 131:293140

TI Semiconductor LED devices

IN Kamikawa, Takeshi; Ito, Shigetoshi

PA Sharp Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01L033-00

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 11298040	A2	19991029	JP 1998-98839	19980410

AB The LED comprises: a sapphire substrate; an n-GaN buffer layer; an n-GaN contact layer with n shoulder electrode; and an n-AlGaN cladding, a GaInN active, a p-AlGaN vaporization preventive, a p-AlGaN cladding, a p-GaN cap, a Ni (or Pd), a conductive and a Au p electrode layer, where the conductive layer comprises Pt, W, WN, V, Mo or Ta; an O-contg. dielec. layer is formed thereon, and the laminate is heat-treated at 400-800.degree..

ST gallium indium nitride LED nickel molybdenum; aluminum gallium nitride LED nickel molybdenum

IT Electric **insulators**
Semiconductor electroluminescent devices
(**semiconductor** LED devices)

IT 1317-82-4, Sapphire (Al2O3) 7439-98-7, Molybdenum, uses 7440-02-0, Nickel, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-25-7, Tantalum, uses 7440-33-7, Tungsten, uses 7440-62-2, Vanadium, uses 7631-86-9, Silica, uses 12033-89-5, Silicon nitride, uses 12058-38-7, Tungsten nitride (WN) 25617-97-4, Gallium nitride (GaN) **106097-44-3**, Aluminum gallium nitride (AlGaN) **110759-40-5**, Aluminum gallium nitride al0.1ga0.9n **120994-23-2**, Gallium indium nitride (GaInN) **124088-93-3**, Gallium indium nitride ga0.8in0.2n **168269-92-9**, Aluminum gallium nitride al0.05ga0.95n
RL: DEV (Device component use); USES (Uses)
(semiconductor LED devices)

IT **106097-44-3**, Aluminum gallium nitride (AlGaN) **110759-40-5**

, Aluminum gallium nitride al0.1ga0.9n **120994-23-2**, Gallium indium nitride (GaInN) **124088-93-3**, Gallium indium nitride ga0.8in0.2n **168269-92-9**, Aluminum gallium nitride al0.05ga0.95n
RL: DEV (Device component use); USES (Uses)
(semiconductor LED devices)

RN 106097-44-3 HCAPLUS
CN Aluminum gallium nitride ((Al,Ga)N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
Ga	0 - 1	7440-55-3
Al	0 - 1	7429-90-5

RN 110759-40-5 HCAPLUS
CN Aluminum gallium nitride (Al0.1Ga0.9N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
Ga	0.9	7440-55-3
Al	0.1	7429-90-5

RN 120994-23-2 HCAPLUS
CN Gallium indium nitride ((Ga,In)N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
In	0 - 1	7440-74-6
Ga	0 - 1	7440-55-3

RN 124088-93-3 HCAPLUS
CN Gallium indium nitride (Ga0.8In0.2N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
In	0.2	7440-74-6
Ga	0.8	7440-55-3

RN 168269-92-9 HCAPLUS
CN Aluminum gallium nitride (Al0.05Ga0.95N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
Ga	0.95	7440-55-3
Al	0.05	7429-90-5

L27 ANSWER 6 OF 13 HCAPLUS COPYRIGHT 2001 ACS
AN 1999:439979 HCAPLUS
DN 131:108742
TI Gallium nitride-type semiconductor light-emitting devices

IN Oku, Yasushige; Kamei, Hidenori
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01L033-00
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 11191635	A2	19990713	JP 1997-359616	19971226

AB The devices comprise: an **insulator** substrate; an n-layer; an active layer; and a p-layer; where the n-layer has at least two parts; the first layer has a thickness of 1 - 5 .mu.m and a carrier d. of 1 x 1016 - 2 x 1018 cm-3; the second layer has a thickness of 0.1 - 0.5 .mu.m and a carrier d. of 2 x 1018 - 1 x 1019 cm-3; and a side n-electrode is formed on the second n-layer.
ST gallium nitride semiconductor LED laser diode; indium gallium nitride LED laser; aluminum gallium nitride LED laser
IT Electron density
Semiconductor electroluminescent devices
Semiconductor lasers
(gallium nitride-type **semiconductor** light-emitting devices)
IT 1317-82-4, Sapphire 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-57-5, Gold, uses 7631-86-9, Silica, uses 24304-00-5, Aluminum nitride 25617-97-4, Gallium nitride 37382-15-3, Aluminum gallium arsenide ((Al,Ga)As) **120994-23-2**, Indium gallium nitride
RL: DEV (Device component use); USES (Uses)
(gallium nitride-type semiconductor light-emitting devices)
IT 7439-95-4, Magnesium, uses 7440-21-3, Silicon, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(gallium nitride-type semiconductor light-emitting devices)
IT **120994-23-2**, Indium gallium nitride
RL: DEV (Device component use); USES (Uses)
(gallium nitride-type semiconductor light-emitting devices)
RN 120994-23-2 HCAPLUS
CN Gallium indium nitride ((Ga,In)N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
In	0 - 1	7440-74-6
Ga	0 - 1	7440-55-3

L27 ANSWER 7 OF 13 HCAPLUS COPYRIGHT 2001 ACS
AN 1999:344737 HCAPLUS
DN 131:25589
TI Gallium nitride-type semiconductor light-emitting device and light-accepting device
IN Toyota, Tatsunori; Kususe, Takeshi; Shono, Hirofumi
PA Nichia Chemical Industries Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent

LA Japanese
IC ICM H01L033-00
ICS H01L031-10; H01S003-18
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11150298	A2	19990602	JP 1997-331012	19971114

AB The light-emitting device has a substrate, a n-type GaN-based semiconductor layer on the substrate, a light-emitting layer on the n-type semiconductor layer, a p-type GaN-type semiconductor layer on the light-emitting layer, a n-side electrode formed on an exposed portion at the center of the n-type semiconductor layer, and a p-side electrode placed on the p-type semiconductor so that it surrounds the n-side electrode. The device is characterized by that light leak from a space between the 2 electrodes is avoided because a continuos elec. **insulator** film is formed from the sidewall of the p-type semiconductor to the inner periphery of the p-side electrode and the n-side electrode is extended over the inner periphery of the p-side electrode through the elec. **insulator** film. The light-accepting device has the same structure.
ST gallium nitride **semiconductor** light emitting device; light accepting device gallium nitride **semiconductor**; leak light prevention **electroluminescent** device
IT **Semiconductor electroluminescent** devices
(gallium nitride-type **semiconductor** light-emitting device and light-accepting device showing prevention of leak of light from **semiconductor** side)
IT Electric **insulators**
(intermediate film of specified structure; in gallium nitride-type semiconductor light-emitting device and light-accepting device showing prevention of leak of light from semiconductor side)
IT Electrodes
(of specified structure; in gallium nitride-type semiconductor light-emitting device and light-accepting device showing prevention of leak of light from semiconductor side)
IT 7439-95-4, Magnesium, uses 7440-21-3, Silicon, uses
RL: MOA (Modifier or additive use); USES (Uses)
(dopant; in gallium nitride-type semiconductor light-emitting device and light-accepting device showing prevention of leak of light from semiconductor side)
IT **106097-44-3**, Aluminum gallium nitride ((Al,Ga)N)
127575-65-9, Aluminum indium gallium nitride
RL: DEV (Device component use); USES (Uses)
(gallium nitride-type semiconductor light-emitting device and light-accepting device showing prevention of leak of light from semiconductor side)
IT **106097-44-3**, Aluminum gallium nitride ((Al,Ga)N)
127575-65-9, Aluminum indium gallium nitride
RL: DEV (Device component use); USES (Uses)
(gallium nitride-type semiconductor light-emitting device and light-accepting device showing prevention of leak of light from semiconductor side)
RN 106097-44-3 HCAPLUS
CN Aluminum gallium nitride ((Al,Ga)N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number

N	1	17778-88-0
Ga	0 - 1	7440-55-3
Al	0 - 1	7429-90-5

RN 127575-65-9 HCAPLUS
CN Aluminum gallium indium nitride ((Al,Ga,In)N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
In	0 - 1	7440-74-6
Ga	0 - 1	7440-55-3
Al	0 - 1	7429-90-5

L27 ANSWER 8 OF 13 HCAPLUS COPYRIGHT 2001 ACS
AN 1998:428084 HCAPLUS
DN 129:143697
TI Manufacture of nitride semiconductor devices
IN Sakamoto, Keiji; Nakamura, Shuji
PA Nichia Chemical Industries Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01S003-18
ICS H01L033-00; H01L021-02
CC 76-2 (Electric Phenomena)
Section cross-reference(s): 75
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 10178239	A2	19980630	JP 1996-336694	19961217

AB N-type nitride semiconductor layers, .gtoreq.6-.mu.m thick, are grown on **insulator** substrates across .ltoreq.0.5-.mu.m-thick buffer layers, after growing further nitride layers, the thickness of the substrates is adjusted to .ltoreq.60 .mu.m, and the wafers (the substrates and nitride layers) are cut into chips.
ST nitride semiconductor device manuf wafer thickness; crystal growth nitride semiconductor device manuf
IT Crystal growth
Electroluminescent devices
Semiconductor device fabrication
(manuf. of nitride **semiconductor** devices)
IT Nitrides
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(manuf. of nitride semiconductor devices)
IT 25617-97-4P, Gallium nitride (GaN) **110759-40-5P**, Aluminum gallium nitride (Al0.1Ga0.9N) **125297-45-2P**, Aluminum gallium nitride (Al0.2Ga0.8N) **132238-81-4P**, Gallium indium nitride (Ga0.9In0.1N)
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(manuf. of nitride semiconductor devices)
IT **110759-40-5P**, Aluminum gallium nitride (Al0.1Ga0.9N)
125297-45-2P, Aluminum gallium nitride (Al0.2Ga0.8N)
132238-81-4P, Gallium indium nitride (Ga0.9In0.1N)

RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(manuf. of nitride semiconductor devices)

RN 110759-40-5 HCAPLUS
CN Aluminum gallium nitride (Al0.1Ga0.9N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
Ga	0.9	7440-55-3
Al	0.1	7429-90-5

RN 125297-45-2 HCAPLUS
CN Aluminum gallium nitride (Al0.2Ga0.8N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
Ga	0.8	7440-55-3
Al	0.2	7429-90-5

RN 132238-81-4 HCAPLUS
CN Gallium indium nitride (Ga0.9In0.1N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
In	0.1	7440-74-6
Ga	0.9	7440-55-3

L27 ANSWER 9 OF 13 HCAPLUS COPYRIGHT 2001 ACS
AN 1995:986945 HCAPLUS
DN 124:101423
TI Group IIIA element nitride **semiconductor electroluminescent** device and its manufacture
IN Koike, Masayoshi; Shibata, Naoki; Yamazaki, Shiro
PA Toyoda Gosei Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01L033-00
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07263748	A2	19951013	JP 1994-76513	19940322
	US 5700713	A	19971223	US 1995-406415	19950320
PRAI	JP 1994-76513		19940322		

AB The device comprises: n- and i-type layers consisting of Group IIIA element nitride semiconductor; and an insulation film partially covering the i-type layer, wherein the the heat treatment of the i-type layer in a N2 atmosphere produces a p-type region in the i-type layer not covered by the insulation film.

ST Group IIIA nitride **electroluminescent** device; **semiconductor** nitride **electroluminescent** device; nitrogen heating **semiconductor electroluminescent** device

IT **Electroluminescent** devices
Semiconductor materials
(Group IIIA element nitride **semiconductor electroluminescent** device produced by heat treatment in nitrogen)

IT 7439-95-4, Magnesium, uses 7440-21-3, Silicon, uses 7440-43-9, Cadmium, uses 7440-66-6, Zinc, uses
RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(Group IIIA element nitride **semiconductor electroluminescent** device produced by heat treatment in nitrogen)

IT 25617-97-4, Gallium nitride **169821-55-0**, Aluminum gallium indium nitride (Al0.28Ga0.66In0.06N) **169821-56-1**, Aluminum gallium indium nitride (Al0.09Ga0.9In0.01N)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(Group IIIA element nitride **semiconductor electroluminescent** device produced by heat treatment in nitrogen)

IT 7727-37-9, Nitrogen, uses
RL: NUU (Nonbiological use, unclassified); USES (Uses)
(Group IIIA element nitride **semiconductor electroluminescent** device produced by heat treatment in nitrogen)

IT 12033-89-5, Silicon nitride, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(elec. **insulator**; Group IIIA element nitride **semiconductor electroluminescent** device produced by heat treatment in nitrogen)

IT **169821-55-0**, Aluminum gallium indium nitride (Al0.28Ga0.66In0.06N) **169821-56-1**, Aluminum gallium indium nitride (Al0.09Ga0.9In0.01N)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(Group IIIA element nitride **semiconductor electroluminescent** device produced by heat treatment in nitrogen)

RN 169821-55-0 HCAPLUS
CN Aluminum gallium indium nitride (Al0.28Ga0.66In0.06N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
In	0.06	7440-74-6
Ga	0.66	7440-55-3
Al	0.28	7429-90-5

RN 169821-56-1 HCAPLUS
CN Aluminum gallium indium nitride (Al0.09Ga0.9In0.1N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number

N	1	17778-88-0
In	0.1	7440-74-6
Ga	0.9	7440-55-3
Al	0.09	7429-90-5

L27 ANSWER 10 OF 13 HCAPLUS COPYRIGHT 2001 ACS
AN 1993:681294 HCAPLUS
DN 119:281294
TI Near-UV **electroluminescence** from a zinc cadmium sulfide selenide/zinc sulfide selenide metal-**insulator-semiconductor** diode on gallium phosphide grown by molecular beam epitaxy
AU Ichino, Kunio; Onishi, Toshikazu; Kawakami, Yoichi; Fujita, Shizuo; Fujita, Shigeo
CS Dep. Electr. Eng., Kyoto Univ., Kyoto, 606-01, Japan
SO Jpn. J. Appl. Phys., Part 2 (1993), 32(9A), L1200-L1202
CODEN: JAPLD8; ISSN: 0021-4922
DT Journal
LA English
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 75
AB A near-UV light-emitting diode based on metal-**insulator**-semiconductor structure using a ZnCdSSe/ZnSSe single quantum well system on a GaP substrate is demonstrated. The device emits intense near-UV light at a wavelength of 391 nm from the ZnCdSSe quantum well with current injection at 77 K.
ST electroluminescence cadmium zinc selenide sulfide; luminescence electro cadmium zinc selenide sulfide
IT Luminescence, electro-
(near-UV, of cadmium zinc selenide sulfide-zinc selenide sulfide diode grown by MBE)
IT Epitaxy
(mol.-beam, of cadmium zinc selenide sulfide-zinc selenide sulfide diode, near-UV electroluminescence after)
IT 12063-98-8, Gallium phosphide, properties
RL: PRP (Properties)
(near-UV electroluminescence of cadmium zinc selenide sulfide-zinc selenide sulfide epitaxial diode on substrate of)
IT **151623-48-2**, Zinc selenide sulfide (ZnSe0.14S0.86)
RL: PRP (Properties)
(near-UV electroluminescence of epitaxial diode from cadmium zinc selenide sulfide and)
IT **151623-49-3**, Cadmium zinc selenide sulfide (Cd0.23Zn0.77Se0.23S0.77)
RL: PRP (Properties)
(near-UV electroluminescence of epitaxial diode from zinc selenide sulfide and)
IT **151623-48-2**, Zinc selenide sulfide (ZnSe0.14S0.86)
RL: PRP (Properties)
(near-UV electroluminescence of epitaxial diode from cadmium zinc selenide sulfide and)
RN 151623-48-2 HCAPLUS
CN Zinc selenide sulfide (ZnSe0.14S0.86) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	0.14	7782-49-2

S	0.86	7704-34-9
Zn	1	7440-66-6

IT **151623-49-3**, Cadmium zinc selenide sulfide (Cd0.23Zn0.77Se0.23S0.77)
RL: PRP (Properties)
(near-UV electroluminescence of epitaxial diode from zinc selenide sulfide and)
RN 151623-49-3 HCAPLUS
CN Cadmium zinc selenide sulfide (Cd0.23Zn0.77Se0.23S0.77) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	0.23	7782-49-2
S	0.77	7704-34-9
Zn	0.77	7440-66-6
Cd	0.23	7440-43-9

L27 ANSWER 11 OF 13 HCAPLUS COPYRIGHT 2001 ACS
AN 1993:591556 HCAPLUS
DN 119:191556
TI Metal-**insulator-semiconductor**-type (MIS) **electroluminescent** device with high efficiency
IN Ando, Takashi; Sasaki, Toru; Matsuoka, Takashi; Katsui, Akinori
PA Nippon Telegraph and Telephone Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01L033-00
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 04209578	A2	19920730	JP 1990-406248	19901207
JP 2893099	B2	19990517		

AB In the device consisting of a single crystal substrate coated with a n-type (InxGayAl1-x-y)N (0 .ltoreq. x, y, x + y .ltoreq. 1) layer, a semi-insulating (InxGayAl1-x-y)N light-emitting layer, and a metal electrode, the interface of the electrode has .gtoreq.1 at. layers of (InxGayAl1-x-y)S surface-improving layer. The device showed high differential quantum efficiency.
ST **semiconductor electroluminescent** device; sulfide surface improving **semiconductor electroluminescent**
IT **Electroluminescent** devices
(**semiconductive**, having aluminum gallium indium sulfide surface-improving layer, with high conversion efficiency)
IT 25617-97-4, Gallium nitride **127575-65-9**, Aluminum gallium indium nitride ((Al,Ga,In)N)
RL: PRP (Properties)
(**semiconductor electroluminescent** device light-emitting layer)
IT 53238-24-7, Gallium sulfide 150581-24-1, Aluminum gallium indium sulfide
RL: PRP (Properties)
(**semiconductor electroluminescent** device

surface-improving layer, for high efficiency)

IT **127575-65-9**, Aluminum gallium indium nitride ((Al,Ga,In)N)
RL: PRP (Properties)
(**semiconductor electroluminescent** device light-emitting layer)

RN 127575-65-9 HCAPLUS
CN Aluminum gallium indium nitride ((Al,Ga,In)N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
In	0 - 1	7440-74-6
Ga	0 - 1	7440-55-3
Al	0 - 1	7429-90-5

L27 ANSWER 12 OF 13 HCAPLUS COPYRIGHT 2001 ACS
AN 1991:570568 HCAPLUS
DN 115:170568
TI Metal-**insulator-semiconductor electroluminescent** device
IN Matsuoka, Takashi; Kawaguchi, Nobuhiro; Katsui, Akinori
PA Nippon Telegraph and Telephone Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01L033-00
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 03040472	A2	19910221	JP 1989-174202	19890707

AB A metal-**insulator-semiconductor electroluminescent** device comprises an **insulator** layer sandwiched between a metal electrode and a **semiconductor** electrode, wherein .gtoreq.1 of the electrodes is transparent.
ST **electroluminescent** device metal **insulator semiconductor**
IT **Electroluminescent** devices
(metal-**insulator-semiconductor**)
IT 1303-00-0, Gallium arsenide (GaAs), uses and miscellaneous 37382-15-3, Aluminum gallium arsenide ((Al,Ga)As) **59989-74-1**, Zinc selenide sulfide (Zn(Se,S)) 107102-89-6, Aluminum gallium indium phosphide ((Al,Ga,In)P)
RL: USES (Uses)
(metal-**insulator-semiconductor electroluminescent** devices contg.)
IT **59989-74-1**, Zinc selenide sulfide (Zn(Se,S))
RL: USES (Uses)
(metal-**insulator-semiconductor electroluminescent** devices contg.)
RN 59989-74-1 HCAPLUS
CN Zinc selenide sulfide (Zn(Se,S)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number

Component	Ratio	Component Registry Number
Se	0 - 1	7782-49-2
S	0 - 1	7704-34-9
Zn	1	7440-66-6

L27 ANSWER 13 OF 13 HCAPLUS COPYRIGHT 2001 ACS
AN 1987:186125 HCAPLUS
DN 106:186125
TI Planar MIS-type blue-emitting electroluminescent device
IN Mizumoto, Teruyuki; Shimobayashi, Takashi; Ito, Naoyuki; Okamoto, Norihisa
PA Seiko Epson Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01L033-00
ICS H01L021-365
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 61224372	A2	19861006	JP 1985-64756	19850328

AB A planar MIS-junction blue-emitting electroluminescent device comprises a GaAs single-cryst. substrate and low-resistance n-type ZnSxSe1-x single-cryst. thin film, wherein the thin film is fabricated by organometallic chem. vapor deposition using an adduct of R2Zn and R2S (R = alkyl) as the Zn source, H2S or H2Se as the group VI element source, and a donor-impurity source that contains group III and group VII organometallic compds.
ST blue emitting planar **electroluminescent** device; metal **insulator semiconductor electroluminescent** device
IT Electroluminescent devices
(MIS-junction, blue-emitting, planar)
IT Sulfides, uses and miscellaneous
RL: USES (Uses)
(alkyl, in zinc selenide sulfide film formation for MIS electroluminescent devices)
IT **59989-74-1**
RL: DEV (Device component use); USES (Uses)
(electroluminescent device from, MIS, blue-emitting)
IT 7440-66-6D, alkyl compds. 7783-06-4, uses and miscellaneous 7783-07-5
RL: USES (Uses)
(in zinc selenide sulfide film formation for MIS electroluminescent devices)
IT **59989-74-1**
RL: DEV (Device component use); USES (Uses)
(electroluminescent device from, MIS, blue-emitting)
RN 59989-74-1 HCAPLUS
CN Zinc selenide sulfide (Zn(Se,S)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	0 - 1	7782-49-2
S	0 - 1	7704-34-9
Zn	1	7440-66-6

L7	1120	SEA FILE=REGISTRY ABB=ON PLU=ON (ZN(L)SE)/ELS AND (CD OR MG OR BE OR S) (L) 3-7/ELC.SUB
L9	779	SEA FILE=REGISTRY ABB=ON PLU=ON (GA(L)N)/ELS AND (IN OR AL) AND 2-8/ELC.SUB
L13	18531	SEA FILE=REGISTRY ABB=ON PLU=ON ZN(L)(S OR SE OR MG OR CD OR BE)/ELS AND 3-6/ELC.SUB
L14	9750	SEA FILE=REGISTRY ABB=ON PLU=ON ZN(L)(S OR SE OR MG OR CD OR BE)/ELS AND 3-4/ELC.SUB
L16	3094	SEA FILE=REGISTRY ABB=ON PLU=ON L14 AND (SE OR S)/ELS
L19	64	SEA FILE=REGISTRY ABB=ON PLU=ON (AL(L)IN(L)N)/ELS AND 3/ELC
L20	4515	SEA FILE=HCAPLUS ABB=ON PLU=ON (ELECTROLUMIN? OR EL) (L) SEMICONDUCT?
L22	8916	SEA FILE=HCAPLUS ABB=ON PLU=ON L7 OR L9
L23	29111	SEA FILE=HCAPLUS ABB=ON PLU=ON L13
L24	15460	SEA FILE=HCAPLUS ABB=ON PLU=ON L16 OR L19
L26	249	SEA FILE=HCAPLUS ABB=ON PLU=ON L20 AND INSULATOR?
L27	13	SEA FILE=HCAPLUS ABB=ON PLU=ON L26 AND (L22 OR L23 OR L24)
L29	1726	SEA FILE=HCAPLUS ABB=ON PLU=ON EL(S) DEVICE?
L30	41	SEA FILE=HCAPLUS ABB=ON PLU=ON L29 AND (L22 OR L23 OR L24)
L31	41	SEA FILE=HCAPLUS ABB=ON PLU=ON L30 NOT L27
L32	24	SEA FILE=HCAPLUS ABB=ON PLU=ON L31 AND SEMICONDUCT?
L33	2	SEA FILE=HCAPLUS ABB=ON PLU=ON INSULAT? AND L32

Timothy Saunders EIC-LAW Lib. 308-413

L33 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2001 ACS
AN 1996:424860 HCAPLUS
DN 125:71371
TI Gallium nitride-base blue electroluminescent devices and their manufacture
IN Shakuda, Yukio
PA Rohm Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01S003-18
ICS H01L033-00
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08064913	A2	19960308	JP 1994-202480	19940826
	US 5838029	A	19981117	US 1995-517121	19950821
PRAI	JP 1994-196852	A	19940822		
	JP 1994-202478	A	19940826		
	JP 1994-202480	A	19940826		
	JP 1994-202481	A	19940826		

AB The devices consist of a Si single crystal substrate, on which an **insulating** film and GaN-base compd. **semiconductor** layers are formed.
ST electroluminescent device gallium nitride silicon; **EL device** gallium nitride silicon; silicon substrate gallium nitride EL; LED gallium nitride silicon substrate; laser gallium nitride silicon substrate
IT Electroluminescent **devices**
(manuf. of gallium nitride **EL devices** on silicon substrate)
IT Group IIIA element pnictides
RL: DEV (Device component use); USES (Uses)
(manuf. of gallium nitride **EL devices** on silicon substrate)
IT Lasers
(**semiconductor**, manuf. of gallium nitride **EL devices** on silicon substrate)
IT **120994-23-2**, Gallium indium nitride ((Ga,In)N)
RL: DEV (Device component use); USES (Uses)
(active layer; manuf. of gallium nitride **EL devices** on silicon substrate)
IT 25617-97-4, Gallium nitride
RL: DEV (Device component use); USES (Uses)
(buffer layer and cap layer; manuf. of gallium nitride **EL devices** on silicon substrate)
IT **106097-44-3**, Aluminum gallium nitride ((Al,Ga)N)
RL: DEV (Device component use); USES (Uses)
(cladding layer; manuf. of gallium nitride **EL devices** on silicon substrate)
IT 1344-28-1, Aluminum oxide, uses 12033-89-5, Silicon nitride (Si3N4), uses
RL: DEV (Device component use); USES (Uses)
(**insulating** film; manuf. of gallium nitride **EL devices** on silicon substrate)
IT 7440-21-3, Silicon, uses

RL: DEV (Device component use); USES (Uses)
(manuf. of gallium nitride **EL devices** on silicon substrate)

IT **120994-23-2**, Gallium indium nitride ((Ga,In)N)
RL: DEV (Device component use); USES (Uses)
(active layer; manuf. of gallium nitride **EL devices** on silicon substrate)

RN 120994-23-2 HCAPLUS

CN Gallium indium nitride ((Ga,In)N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
In	0 - 1	7440-74-6
Ga	0 - 1	7440-55-3

IT **106097-44-3**, Aluminum gallium nitride ((Al,Ga)N)
RL: DEV (Device component use); USES (Uses)
(cladding layer; manuf. of gallium nitride **EL devices** on silicon substrate)

RN 106097-44-3 HCAPLUS

CN Aluminum gallium nitride ((Al,Ga)N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
Ga	0 - 1	7440-55-3
Al	0 - 1	7429-90-5

L33 ANSWER 2 OF 2 HCAPLUS COPYRIGHT 2001 ACS

AN 1992:161510 HCAPLUS

DN 116:161510

TI Emission characteristics of terbium trifluoride-doped (zinc, cadmium)sulfide and terbium trifluoride-doped zinc(sulfide, selenide) **EL** (electroluminescent) **devices**

AU Im, Y. M.; Kim, H. D.; Kim, H. J.; Kang, E. D.; Lee, S. K.; Lee, C. J.

CS Coll. Eng., Inha Univ., Inchun, S. Korea

SO Nonmunjip - Sanop Kwahak Kisul Yonguso (Inha Taehakkyo) (1990), 18, 179-89
CODEN: NSKYDM; ISSN: 0253-6234

DT Journal

LA Korean

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

AB The a.c. thin film electroluminescence with doubly **insulating** layer structure was studied. ZnS, (Zn, Cd)S, Zn(S, Se) films doped with TbF3 were used in the **EL devices**. The **devices** were prepd. by an electron beam evapn. technique on the glass substrates coated with indium-tin-oxide and their **EL** characteristics were investigated. The investigated results of the II-VI compd. **semiconductor EL devices** are summarized.
X-ray diffraction patterns of ZnS, (Zn, Cd)S and Zn(S, Se) thin films are polycryst. with cubic structure. The films can be produced in the form of mixed crystal combinations in every proportion. The ZnS **EL device** with TbF3 concn. of 2.0 mol% shows the strongest emission intensity. The optimum thickness of active and **insulating** layers of the device is 6,000-8,000 .ANG. and 3,000 .ANG., resp. The spectrum of the ZnS: TbF3 **EL device** shows 4 peaks in

the visible region. The EL spectra of Zn(S, Se):TbF3 and (Zn, Cd)S:TbF3 are similar to the ZnS:TbF2 EL spectrum. The **EL** spectra of (Zn, Cd)S:TbF3 and Zn(S, Se):TbF3 **EL devices** do not depend on the mixing ratio of 2 sulfides an are sthe ame as those of the ZnS:TbF3 **EL device**. With increasing ZnSe or CdS content in Zn(S, Se):TbF3 or (Zn, Cd)S:TbF3 cells, the bandgap energy of the active layer decreases. The lowering of the threshold voltage for EL emission which was obsd. in the above cells may be attributed to this effect. However, these **devices** exhibit inferior brightness-voltage characteristics and lower **EL** efficiency compared with the ZnS:TbF3 **EL device**.

ST electroluminescent device cadmium zinc sulfide terbium; selenide sulfide zinc electroluminescent device terbium

IT Luminescence, electro-
(of terbium-doped cadmium zinc sulfide or zinc selenide sulfide or zinc sulfide)

IT Electroluminescent devices
(terbium-doped cadmium zinc sulfide or zinc selenide sulfide or zinc sulfide)

IT 1314-98-3, Zinc sulfide, uses **12442-27-2**, Cadmium zinc sulfide ((Cd,Zn)S)
RL: USES (Uses)
(electroluminescent device from terbium-contg., characteristics of)

IT **59989-74-1**, Zinc selenide sulfide (Zn(Se,S))
RL: PRP (Properties)
(electroluminescent device from terbium-contg., characteristics of)

IT 22541-20-4, Terbium(3+), uses
RL: USES (Uses)
(electroluminescent thin-film devices from cadmium zinc selenide or zinc selenide sulfido zinc sulfide doped with, characteristics of)

IT **12442-27-2**, Cadmium zinc sulfide ((Cd,Zn)S)
RL: USES (Uses)
(electroluminescent device from terbium-contg., characteristics of)

RN 12442-27-2 HCAPLUS

CN Cadmium zinc sulfide ((Cd,Zn)S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Zn	0 - 1	7440-66-6
Cd	0 - 1	7440-43-9

IT **59989-74-1**, Zinc selenide sulfide (Zn(Se,S))
RL: PRP (Properties)
(electroluminescent device from terbium-contg., characteristics of)

RN 59989-74-1 HCAPLUS

CN Zinc selenide sulfide (Zn(Se,S)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	0 - 1	7782-49-2
S	0 - 1	7704-34-9
Zn	1	7440-66-6

L7	1120	SEA FILE=REGISTRY ABB=ON PLU=ON (ZN(L)SE)/ELS AND (CD OR MG OR BE OR S) (L) 3-7/ELC.SUB
L9	779	SEA FILE=REGISTRY ABB=ON PLU=ON (GA(L)N)/ELS AND (IN OR AL) AND 2-8/ELC.SUB
L13	18531	SEA FILE=REGISTRY ABB=ON PLU=ON ZN(L)(S OR SE OR MG OR CD OR BE)/ELS AND 3-6/ELC.SUB
L14	9750	SEA FILE=REGISTRY ABB=ON PLU=ON ZN(L)(S OR SE OR MG OR CD OR BE)/ELS AND 3-4/ELC.SUB
L16	3094	SEA FILE=REGISTRY ABB=ON PLU=ON L14 AND (SE OR S)/ELS
L19	64	SEA FILE=REGISTRY ABB=ON PLU=ON (AL(L)IN(L)N)/ELS AND 3/ELC
L20	4515	SEA FILE=HCAPLUS ABB=ON PLU=ON (ELECTROLUMIN? OR EL) (L) SEMICONDUCT?
L22	8916	SEA FILE=HCAPLUS ABB=ON PLU=ON L7 OR L9
L23	29111	SEA FILE=HCAPLUS ABB=ON PLU=ON L13
L24	15460	SEA FILE=HCAPLUS ABB=ON PLU=ON L16 OR L19
L26	249	SEA FILE=HCAPLUS ABB=ON PLU=ON L20 AND INSULATOR?
L27	13	SEA FILE=HCAPLUS ABB=ON PLU=ON L26 AND (L22 OR L23 OR L24)
L29	1726	SEA FILE=HCAPLUS ABB=ON PLU=ON EL(S) DEVICE?
L30	41	SEA FILE=HCAPLUS ABB=ON PLU=ON L29 AND (L22 OR L23 OR L24)
L31	41	SEA FILE=HCAPLUS ABB=ON PLU=ON L30 NOT L27
L32	24	SEA FILE=HCAPLUS ABB=ON PLU=ON L31 AND SEMICONDUCT?
L33	2	SEA FILE=HCAPLUS ABB=ON PLU=ON INSULAT? AND L32
L34	23	SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND LAYER?
L35	12	SEA FILE=HCAPLUS ABB=ON PLU=ON (CORE OR CLADD?) AND L34
L36	11	SEA FILE=HCAPLUS ABB=ON PLU=ON L35 NOT (L33 OR L27)

Timothy Saunders EIC-LAW Lib. 308-413

L36 ANSWER 1 OF 11 HCAPLUS COPYRIGHT 2001 ACS
AN 1997:442804 HCAPLUS
DN 127:87962
TI Manufacture of **semiconductive** electroluminescent device with long service life
IN Ishikawa, Hironori
PA Toshiba Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01L033-00
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 09162441	A2	19970620	JP 1995-316839	19951205

AB The device includes a high-resistant region surrounding a light-emitting part and extending to the device inside. The device is manufd. by MOCVD and formation of the high-resistant region as above preferably by ion implantation or dopant diffusion.
ST **semiconductive** electroluminescent device service life; aluminum indium gallium nitride **EL device**; sidewall protective resistive **layer EL device**; implantation sidewall resistive **layer EL device**; diffusion sidewall resistive **layer EL device**
IT Ion implantation
Thermal diffusion
(manuf. of **EL device** with high-resistant sidewall region inhibiting leak current)
IT Electroluminescent **devices**
(**semiconductive**; manuf. of **EL device** with high-resistant sidewall region inhibiting leak current)
IT **120994-23-2P**, Indium gallium nitride
RL: DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)
(active **layer**; manuf. of **EL device** with high-resistant sidewall region inhibiting leak current)
IT **106097-44-3P**, Aluminum gallium nitride ((Al,Ga)N)
RL: DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)
(buffer **layer**; manuf. of **EL device** with high-resistant sidewall region inhibiting leak current)
IT 1333-74-0, Hydrogen, uses
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(dopant, high-resistant region contg.; manuf. of **EL device** with .high-resistant sidewall region inhibiting leak current)
IT 25617-97-4P, Gallium nitride
RL: DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)
(doped, **cladding layer**; manuf. of **EL device** with high-resistant sidewall region inhibiting leak

current)
IT 108730-15-0P, Aluminum gallium indium phosphide (Al0-0.5Ga0-0.5In0.5P)
RL: DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)
(doped; manuf. of **EL device** with high-resistant sidewall region inhibiting leak current)
IT 1344-28-1, Aluminum oxide (Al2O3), uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(sapphire-type substrate; manuf. of **EL device** with high-resistant sidewall region inhibiting leak current)
IT 1303-00-0, Gallium arsenide, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(substrate; manuf. of **EL device** with high-resistant sidewall region inhibiting leak current)
IT **120994-23-2P**, Indium gallium nitride
RL: DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)
(active **layer**; manuf. of **EL device** with high-resistant sidewall region inhibiting leak current)
RN 120994-23-2 HCAPLUS
CN Gallium indium nitride ((Ga,In)N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
In	0 - 1	7440-74-6
Ga	0 - 1	7440-55-3

IT **106097-44-3P**, Aluminum gallium nitride ((Al,Ga)N)
RL: DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)
(buffer **layer**; manuf. of **EL device** with high-resistant sidewall region inhibiting leak current)
RN 106097-44-3 HCAPLUS
CN Aluminum gallium nitride ((Al,Ga)N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
Ga	0 - 1	7440-55-3
Al	0 - 1	7429-90-5

L36 ANSWER 2 OF 11 HCAPLUS COPYRIGHT 2001 ACS
AN 1996:554502 HCAPLUS
DN 125:180949
TI Nitride compound electroluminescent (**EL**) **devices** with high luminance
IN Unno, Tsunehiro; Shibata, Masatomo; Watanabe, Masatoshi; Takahashi, Takeshi; Kuma, Shoji
PA Hitachi Cable, Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF

DT Patent
LA Japanese
IC ICM H01L033-00
ICS H01S003-18
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08167735	A2	19960625	JP 1994-307430	19941212

AB The **EL devices** (e.g., LEDs, LDs), consisting of a laminate of nitride compd. **semiconductor** (e.g., GaN, AlN, InN) or nitride compd. mixed crystal **semiconductor** (e.g., AlGaN, InGaN, AlInN) **layers** formed on a sapphire substrate coated with a nitride compd. **semiconductor** buffer **layer**: n-type current-diffusion **layer**/n-type **cladding layer** /active **layer**/p-type **cladding layer** (**cladding layers** with band gap larger than the active **layer**)/p-type current-diffusion **layer**, have the difference between the mixed crystal ratio of the p- and n-type current-diffusion **layers** and the mixed crystal ratio of the active **layer** .ltoreq.0.2. The p type and the n type may be exchanged. Alternatively the **EL devices** have (1) InGaN current-diffusion **layers** and active **layer** and InGaN, GaN, or AlGaN **cladding layers** with the mixed crystal ratio difference .ltoreq.0.2; (2) AlGaN current-diffusion **layers**, active **layer**, and **cladding layers** with the mixed crystal ratio difference .ltoreq.0.1, or (3) AlInN current-diffusion **layers** and active **layer**, and AlInN or AlGaN **cladding layers** with the mixed crystal ratio difference .ltoreq.0.1. The **EL devices** give high-luminance emission at the wavelength from green to UV range.

ST electroluminescent device nitride mixed crystal; **EL device** nitride mixed crystal; LED nitride mixed crystal; laser diode nitride mixed crystal

IT Electroluminescent **devices**
(nitride compd. **semiconductor EL devices** for high luminance from green to UV range)

IT Lasers
(**semiconductor**, nitride compd. **semiconductor EL devices** for high luminance from green to UV range)

IT 24304-00-5, Aluminum nitride 25617-97-4, Gallium nitride 25617-98-5, Indium nitride **106097-44-3**, Aluminum gallium nitride ((Al,Ga)N) **120994-22-1**, Aluminum indium nitride (Al0-1In0-1N) **120994-23-2**, Gallium indium nitride ((Ga,In)N)
RL: DEV (Device component use); USES (Uses)
(nitride compd. **semiconductor EL devices** for high luminance from green to UV range)

IT **106097-44-3**, Aluminum gallium nitride ((Al,Ga)N) **120994-22-1**, Aluminum indium nitride (Al0-1In0-1N) **120994-23-2**, Gallium indium nitride ((Ga,In)N)
RL: DEV (Device component use); USES (Uses)
(nitride compd. **semiconductor EL devices** for high luminance from green to UV range)

RN 106097-44-3 HCAPLUS
CN Aluminum gallium nitride ((Al,Ga)N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number

N	1	17778-88-0
Ga	0 - 1	7440-55-3
Al	0 - 1	7429-90-5

RN 120994-22-1 HCAPLUS
CN Aluminum indium nitride ((Al,In)N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
In	0 - 1	7440-74-6
Al	0 - 1	7429-90-5

RN 120994-23-2 HCAPLUS
CN Gallium indium nitride ((Ga,In)N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
In	0 - 1	7440-74-6
Ga	0 - 1	7440-55-3

L36 ANSWER 3 OF 11 HCAPLUS COPYRIGHT 2001 ACS
AN 1996:534018 HCAPLUS
DN 125:180947
TI Group II-VI **semiconductor** electroluminescent (**EL**) **devices** with decreased lamination defects
IN Kuroda, Naotaka; Iwata, Hiroshi
PA Nippon Electric Co, Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01S003-18
ICS H01L033-00
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 08148765	A2	19960607	JP 1994-307075	19941117
JP 2586349	B2	19970226		

AB The **EL devices** have a Be-contg. Group II-VI buffer **layer** (e.g, BeTe, BeSe, BeS, their 3-, or 4-component mixed crystal) between a **semiconductor** substrate (e.g., not II-VI: GaAs, InP, GaP, Si, Ge) and Group II-VI epitaxial **layers** contg. a light-emitting **layer** (e.g., active **layer**: CdZnSe, ZnSe, ZnSSe, ZnMgSeTe) or between a buffer **layer** formed on the substrate with the same compn. as the substrate and the Group II-VI epitaxial **layers**.
ST Group II VI electroluminescent device; **EL device** II VI buffer **layer**
IT Electroluminescent **devices**
(Group II-VI **EL devices** with beryllium-contg. buffer **layer** for decreased lamination defects)
IT Lasers

(**semiconductor**, Group II-VI **EL devices**
with beryllium-contg. buffer **layer** for decreased lamination
defects)

IT 1315-09-9, Zinc selenide **59989-74-1**, Zinc selenide sulfide (Zn(Se,S)) **158346-21-5**, Cadmium zinc selenide
RL: DEV (Device component use); USES (Uses)
(active **layer**; Group II-VI **EL devices**
with beryllium-contg. buffer **layer** for decreased lamination
defects)

IT 12232-25-6, Beryllium selenide (bese) 12232-27-8, Beryllium telluride 13598-22-6, Beryllium sulfide 180618-05-7, Beryllium cadmium telluride ((Be,Cd)Te)
RL: DEV (Device component use); USES (Uses)
(buffer **layer**; Group II-VI **EL devices**
with beryllium-contg. buffer **layer** for decreased lamination
defects)

IT **108398-96-5**, Cadmium zinc selenide telluride (cdznsete)
137575-57-6, Magnesium zinc selenide sulfide ((Mg,Zn)(Se,S))
156320-62-6, Cadmium magnesium zinc selenide (cdmgznse)
160641-06-5, Magnesium zinc selenide telluride (mgznsete)
RL: DEV (Device component use); USES (Uses)
(**cladding layer**; Group II-VI **EL devices** with beryllium-contg. buffer **layer** for decreased lamination defects)

IT 1303-00-0, Gallium arsenide, uses 7440-21-3, Silicon, uses 7440-56-4, Germanium, uses 12063-98-8, Gallium phosphide, uses 22398-80-7, Indium phosphide, uses
RL: DEV (Device component use); USES (Uses)
(substrate; Group II-VI **EL devices** with beryllium-contg. buffer **layer** for decreased lamination defects)

IT **59989-74-1**, Zinc selenide sulfide (Zn(Se,S)) **158346-21-5**, Cadmium zinc selenide
RL: DEV (Device component use); USES (Uses)
(active **layer**; Group II-VI **EL devices**
with beryllium-contg. buffer **layer** for decreased lamination
defects)

RN 59989-74-1 HCAPLUS
CN Zinc selenide sulfide (Zn(Se,S)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	0 - 1	7782-49-2
S	0 - 1	7704-34-9
Zn	1	7440-66-6

RN 158346-21-5 HCAPLUS
CN Cadmium zinc selenide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	x	7782-49-2
Zn	x	7440-66-6
Cd	x	7440-43-9

IT **108398-96-5**, Cadmium zinc selenide telluride (cdznsete)
137575-57-6, Magnesium zinc selenide sulfide ((Mg,Zn)(Se,S))
156320-62-6, Cadmium magnesium zinc selenide (cdmgznse)

160641-06-5, Magnesium zinc selenide telluride (mgznsete)
RL: DEV (Device component use); USES (Uses)
(**cladding layer**; Group II-VI **EL devices** with beryllium-contg. buffer **layer** for decreased lamination defects)

RN 108398-96-5 HCAPLUS
CN Cadmium zinc selenide telluride ((Cd,Zn)(Se,Te)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Te	0 - 1	13494-80-9
Se	0 - 1	7782-49-2
Zn	0 - 1	7440-66-6
Cd	0 - 1	7440-43-9

RN 137575-57-6 HCAPLUS
CN Magnesium zinc selenide sulfide ((Mg,Zn)(Se,S)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	0 - 1	7782-49-2
S	0 - 1	7704-34-9
Zn	0 - 1	7440-66-6
Mg	0 - 1	7439-95-4

RN 156320-62-6 HCAPLUS
CN Cadmium magnesium zinc selenide ((Cd,Mg,Zn)Se) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	1	7782-49-2
Zn	0 - 1	7440-66-6
Cd	0 - 1	7440-43-9
Mg	0 - 1	7439-95-4

RN 160641-06-5 HCAPLUS
CN Magnesium zinc selenide telluride ((Mg,Zn)(Se,Te)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Te	0 - 1	13494-80-9
Se	0 - 1	7782-49-2
Zn	0 - 1	7440-66-6
Mg	0 - 1	7439-95-4

L36 ANSWER 4 OF 11 HCAPLUS COPYRIGHT 2001 ACS
AN 1996:466579 HCAPLUS
DN 125:99719
TI Gallium nitride **semiconductor** electroluminescent devices and their manufacture
IN Shakuda, Yukio
PA Rohm Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent

LA Japanese
IC ICM H01L033-00
ICS H01S003-18
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08116092	A2	19960507	JP 1995-215625	19950824
PRAI	JP 1994-202481	A	19940826		

AB Electroluminescent (**EL**) **devices** comprise a GaN-based **semiconductor layer** (e.g., multilayer consisting of n-type GazIn1-zN (0< z .ltoreq.1) buffer **layer**, n-type AlxGa1-xN (0< x <1) lower **cladding layer**, GayIn1-yN (0< y .ltoreq.1) active **layer**, p-type AlxGa1-xN (0< x <1) upper **cladding layer**, p-type GaN capping **layer**) formed on a Group III-V compd. **semiconductor** (e.g., GaAs, InAs, GaP, InP) substrate. The GaN-based **semiconductor layer** is preferably formed on a Group V surface of the substrate. The **EL device** manuf. involves forming the GaN-based **semiconductor** multilayer on a Group III-V substrate with lattice match, forming electrodes on the substrate and the capping **layer**, and cleaving the chip. Lattice mismatch, crystal defects, and dislocations are reduced in the devices (LEDs, laser diodes, etc.).

ST gallium nitride electroluminescent device substrate; electroluminescent device gallium nitride substrate; LED gallium nitride substrate; Group III pnictide substrate LED; laser diode gallium nitride substrate

IT Electroluminescent devices
(gallium nitride system-based electroluminescent devices with Group III-V substrates and their manuf.)

IT Group IIIA element pnictides
RL: DEV (Device component use); USES (Uses)
(substrate; gallium nitride system-based electroluminescent devices with Group III-V substrates and their manuf.)

IT Lasers
(**semiconductor**, gallium nitride system-based electroluminescent devices with Group III-V substrates and their manuf.)

IT 25617-97-4P, Gallium nitride
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(capping **layer**; gallium nitride system-based electroluminescent devices with Group III-V substrates and their manuf.)

IT **106097-44-3P**, Aluminum gallium nitride ((Al,Ga)N)
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(**cladding layer**; gallium nitride system-based electroluminescent devices with Group III-V substrates and their manuf.)

IT **120994-23-2P**, Gallium indium nitride ((Ga,In)N)
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(gallium nitride system-based electroluminescent devices with Group III-V substrates and their manuf.)

IT 1303-00-0, Gallium arsenide, uses 1303-11-3, Indium arsenide, uses 12063-98-8, Gallium phosphide, uses 22398-80-7, Indium phosphide, uses
RL: DEV (Device component use); USES (Uses)
(substrate; gallium nitride system-based electroluminescent devices

with Group III-V substrates and their manuf.)
IT **106097-44-3P**, Aluminum gallium nitride ((Al,Ga)N)
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(**cladding layer**; gallium nitride system-based electroluminescent devices with Group III-V substrates and their manuf.)
RN 106097-44-3 HCAPLUS
CN Aluminum gallium nitride ((Al,Ga)N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
Ga	0 - 1	7440-55-3
Al	0 - 1	7429-90-5

IT **120994-23-2P**, Gallium indium nitride ((Ga,In)N)
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(gallium nitride system-based electroluminescent devices with Group III-V substrates and their manuf.)
RN 120994-23-2 HCAPLUS
CN Gallium indium nitride ((Ga,In)N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
In	0 - 1	7440-74-6
Ga	0 - 1	7440-55-3

L36 ANSWER 5 OF 11 HCAPLUS COPYRIGHT 2001 ACS
AN 1996:455370 HCAPLUS
DN 125:99718
TI Group II-VI **semiconductor** electroluminescent devices
IN Kato, Gosaku; Okuyama, Hiroyuki
PA Sony Corp, Japan
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01S003-18
ICS H01L033-00
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08111566	A2	19960430	JP 1994-268359	19941006

AB The devices comprises a compd. **semiconductor** (e.g., GaAs) substrate, and a Group II-VI (e.g., ZnCdSe-based, ZnSe-based, ZnSSe-based, ZnMgSSe-based) active **layer** sandwiched by p-type and n-type ZnMgSSe **cladding layers**, wherein the Mg compn. ratio of the n-type **cladding layer** is >0.10 and .ltoreq.0.20.
ST **semiconductor EL device** II chalcogenide; laser diode Group II chalcogenide; LED II chalcogenide **cladding**

layer

IT Electroluminescent **devices**
(Group II-VI **semiconductor EL devices** with low-threshold c.d. and long life)

IT Group IIB element chalcogenides
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(active **layer**; Group II-VI **semiconductor EL devices** with low-threshold c.d. and long life)

IT Lasers
(**semiconductor**, Group II-VI **semiconductor EL devices** with low-threshold c.d. and long life)

IT **121110-57-4P**, Cadmium zinc selenide (Cd0.08Zn0.92Se)
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(active **layer**; Group II-VI **semiconductor EL devices** with low-threshold c.d. and long life)

IT **179038-93-8P**, Magnesium zinc selenide sulfide (Mg0.15Zn0.85Se0.78S0.22)
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(chlorine-doped, **cladding layer**; Group II-VI **semiconductor EL devices** with low-threshold c.d. and long life)

IT **161123-03-1P**, Magnesium zinc selenide sulfide (Mg0.09Zn0.91Se0.82S0.18)
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(nitrogen-doped, **cladding layer**; Group II-VI **semiconductor EL devices** with low-threshold c.d. and long life)

IT **113937-99-8P**, Zinc selenide sulfide (ZnSe0.94S0.06)
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(optical waveguide **layer**; Group II-VI **semiconductor EL devices** with low-threshold c.d. and long life)

IT 1303-00-0, Gallium arsenide, uses
RL: DEV (Device component use); USES (Uses)
(substrate; Group II-VI **semiconductor EL devices** with low-threshold c.d. and long life)

IT **121110-57-4P**, Cadmium zinc selenide (Cd0.08Zn0.92Se)
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(active **layer**; Group II-VI **semiconductor EL devices** with low-threshold c.d. and long life)

RN 121110-57-4 HCAPLUS

CN Cadmium zinc selenide (Cd0.08Zn0.92Se) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	1	7782-49-2
Zn	0.92	7440-66-6
Cd	0.08	7440-43-9

IT **179038-93-8P**, Magnesium zinc selenide sulfide (Mg0.15Zn0.85Se0.78S0.22)
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(chlorine-doped, **cladding layer**; Group II-VI

semiconductor EL devices with low-threshold c.d. and long life)

RN 179038-93-8 HCAPLUS

CN Magnesium zinc selenide sulfide (Mg0.15Zn0.85Se0.78S0.22) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	0.78	7782-49-2
S	0.22	7704-34-9
Zn	0.85	7440-66-6
Mg	0.15	7439-95-4

IT **161123-03-1P**, Magnesium zinc selenide sulfide (Mg0.09Zn0.91Se0.82S0.18)
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(nitrogen-doped, **cladding layer**; Group II-VI **semiconductor EL devices** with low-threshold c.d. and long life)

RN 161123-03-1 HCAPLUS

CN Magnesium zinc selenide sulfide (Mg0.09Zn0.91Se0.82S0.18) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	0.82	7782-49-2
S	0.18	7704-34-9
Zn	0.91	7440-66-6
Mg	0.09	7439-95-4

IT **113937-99-8P**, Zinc selenide sulfide (ZnSe0.94S0.06)
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(optical waveguide **layer**; Group II-VI **semiconductor EL devices** with low-threshold c.d. and long life)

RN 113937-99-8 HCAPLUS

CN Zinc selenide sulfide (ZnSe0.94S0.06) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	0.94	7782-49-2
S	0.06	7704-34-9
Zn	1	7440-66-6

L36 ANSWER 6 OF 11 HCAPLUS COPYRIGHT 2001 ACS

AN 1996:428132 HCAPLUS

DN 125:71363

TI Blue electroluminescent devices using gallium nitride compound **semiconductor**

IN Shakuda, Yukio

PA Rohm Kk, Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01L033-00
ICS H01S003-18
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08064869	A2	19960308	JP 1994-202476	19940826
	US 5825052	A	19981020	US 1995-515569	19950816
PRAI	JP 1994-202476		19940826		
	JP 1994-202477		19940826		

AB The device comprises n- and p-type GaN-base **semiconductor layers**, and n- and p-type electrodes resp. formed on the n- and p-type **layers**. The p-type GaN-base **semiconductor layer** contains dopant(s) selected from Mg, Zn, Cd, Be, and Mn, and the n-type **layer** is doped with element(s) selected from Ge, Te, Sn, S, Se, and Te, for reducing the electrode contact resistance.
ST electroluminescent device gallium nitride dopant; **EL device** gallium nitride dopant; LED blue gallium nitride dopant
IT Electric contacts
Electroluminescent devices
(gallium nitride-base electroluminescent devices)
IT Group IIIA element pnictides
RL: DEV (Device component use); USES (Uses)
(gallium nitride-base electroluminescent devices)
IT 25617-97-4, Gallium nitride
RL: DEV (Device component use); USES (Uses)
(capping **layer** and buffer **layer**; gallium nitride-base electroluminescent devices)
IT **106097-44-3**, Aluminum gallium nitride ((Al,Ga)N)
RL: DEV (Device component use); USES (Uses)
(**cladding layer**; gallium nitride-base electroluminescent devices)
IT 7439-95-4, Magnesium, uses 7439-96-5, Manganese, uses 7440-21-3, Silicon, uses 7440-41-7, Beryllium, uses 7440-43-9, Cadmium, uses 7440-56-4, Germanium, uses 7440-66-6, Zinc, uses 7704-34-9, Sulfur, uses 7782-49-2, Selenium, uses 13494-80-9, Tellurium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(gallium nitride-base electroluminescent devices)
IT **106097-44-3**, Aluminum gallium nitride ((Al,Ga)N)
RL: DEV (Device component use); USES (Uses)
(**cladding layer**; gallium nitride-base electroluminescent devices)
RN 106097-44-3 HCAPLUS
CN Aluminum gallium nitride ((Al,Ga)N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
Ga	0 - 1	7440-55-3
Al	0 - 1	7429-90-5

L36 ANSWER 7 OF 11 HCAPLUS COPYRIGHT 2001 ACS
AN 1996:424922 HCAPLUS
DN 125:71402
TI Group II-VI **semiconductor** electroluminescent devices with long life

IN Nakano, Kazushi; Matsumoto, Osamu; Ito, Satoru; Ishibashi, Akira
PA Sony Corp, Japan
SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01S003-18
ICS H01L033-00
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08097518	A2	19960412	JP 1994-258769	19940928

AB The **EL devices** have 1st and 2nd **cladding layers** of Group II-VI compd. **semiconductor** (II: Zn, Mg, Cd, Hg, Be; VI: Se, Te, S) and an active **layer** (between the 2 **cladding layers**) of Group II-VI compd. **semiconductor** (II: Zn, Mg, Cd, Hg, Be; VI: Se, Te, S; II or VI element with smaller at. radius, e.g., S, Be, O) on a substrate (e.g., GaAs). The devices may have a Group II-VI optical waveguide **layer** between the active **layer** and the **cladding layer**. The **cladding layers** may comprise a ZnMgSSe-type compd. and the active **layer** may comprise a ZnCdSSe-type (0.02.ltoreq. S <0.2, 0.01.ltoreq. Cd .ltoreq.0.35) or ZnSSe-type (0.02.ltoreq. S <0.2) compd. The devices are useful as blue- or green-emitting LDs and LEDs.
ST Group II VI **EL device**; electroluminescent device II VI blue green; laser diode II VI blue green; LED II VI blue green
IT Alkaline earth chalcogenides
Group IIB element chalcogenides
RL: DEV (Device component use); USES (Uses)
(Group II-VI **semiconductor** electroluminescent devices)
IT Electroluminescent devices
Lasers
(blue- or green-emitting; Group II-VI **semiconductor** electroluminescent devices)
IT **178496-72-5P**, Cadmium zinc selenide sulfide (Cd0.25Zn0.75Se0.93S0.07)
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(active **layer**; Group II-VI **semiconductor** electroluminescent devices)
IT **161123-03-1P**, Zinc magnesium sulfide selenide (Zn0.91Mg0.09S0.18Se0.82)
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(**cladding layer**; Group II-VI **semiconductor** electroluminescent devices)
IT 1303-00-0, Gallium arsenide, uses
RL: DEV (Device component use); USES (Uses)
(substrate; Group II-VI **semiconductor** electroluminescent devices)
IT **109657-91-2P**, Zinc sulfide selenide (ZnS0.16Se0.84)
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(waveguide **layer**; Group II-VI **semiconductor** electroluminescent devices)
IT **178496-72-5P**, Cadmium zinc selenide sulfide (Cd0.25Zn0.75Se0.93S0.07)

RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(active **layer**; Group II-VI **semiconductor** electroluminescent devices)

RN 178496-72-5 HCAPLUS
CN Cadmium zinc selenide sulfide (Cd0.25Zn0.75Se0.93S0.07) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	0.93	7782-49-2
S	0.07	7704-34-9
Zn	0.75	7440-66-6
Cd	0.25	7440-43-9

IT **161123-03-1P**, Zinc magnesium sulfide selenide (Zn0.91Mg0.09S0.18Se0.82)
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(**cladding layer**; Group II-VI **semiconductor** electroluminescent devices)

RN 161123-03-1 HCAPLUS
CN Magnesium zinc selenide sulfide (Mg0.09Zn0.91Se0.82S0.18) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	0.82	7782-49-2
S	0.18	7704-34-9
Zn	0.91	7440-66-6
Mg	0.09	7439-95-4

IT **109657-91-2P**, Zinc sulfide selenide (ZnS0.16Se0.84)
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(waveguide **layer**; Group II-VI **semiconductor** electroluminescent devices)

RN 109657-91-2 HCAPLUS
CN Zinc selenide sulfide (ZnSe0.84S0.16) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	0.84	7782-49-2
S	0.16	7704-34-9
Zn	1	7440-66-6

L36 ANSWER 8 OF 11 HCAPLUS COPYRIGHT 2001 ACS
AN 1996:396128 HCAPLUS
DN 125:44789
TI Group II-VI **semiconductor** electroluminescent devices for short wavelength oscillation
IN Okuyama, Hiroyuki; Ishibashi, Akira; Kato, Gosaku; Yoshida, Hiroshi; Nakano, Kazushi; Ukita, Shoichi; Kijima, Satoru; Okamoto, Sakurako
PA Sony Corp, Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF

DT Patent
LA Japanese
IC ICM H01S003-18
ICS H01L033-00
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08097519	A2	19960412	JP 1995-17327	19950203
	US 5657336	A	19970812	US 1995-508966	19950728
	US 5740193	A	19980414	US 1997-832065	19970402
PRAI	JP 1994-178773		19940729		
	JP 1995-17327		19950203		
	US 1995-508966		19950728		

AB The electroluminescent devices have an n- and/or p-doped Group II-VI active **layer** (e.g., Cl- and/or N-doped ZnSe or ZnCdSe) between 1st and 2nd **cladding layers**. The Cl-contg. material used in doping may be ZnCl2. The devices are useful as laser diodes and LEDs emitting blue or green light in room temp. and have a long life.

ST Group II chalcogenide electroluminescent device dopant; laser diode II VI dopant; LED II VI dopant

IT Group IIB element chalcogenides
RL: DEV (Device component use); USES (Uses)
(active **layer**; Group II-VI **EL devices** with doped active **layer** for long life)

IT Electroluminescent **devices**
(blue- or green-; Group II-VI **EL devices** with doped active **layer** for long life)

IT Lasers
(**semiconductor**, blue- or green-; Group II-VI **EL devices** with doped active **layer** for long life)

IT 1315-09-9, Zinc selenide **158346-21-5**, Zinc cadmium selenide
RL: DEV (Device component use); USES (Uses)
(active **layer**; Group II-VI **EL devices** with doped active **layer** for long life)

IT 7646-85-7, Zinc chloride, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(dopant material; Group II-VI **EL devices** with doped active **layer** for long life)

IT 7727-37-9, Nitrogen, uses 7782-50-5, Chlorine, uses
RL: MOA (Modifier or additive use); USES (Uses)
(dopant; Group II-VI **EL devices** with doped active **layer** for long life)

IT **158346-21-5**, Zinc cadmium selenide
RL: DEV (Device component use); USES (Uses)
(active **layer**; Group II-VI **EL devices** with doped active **layer** for long life)

RN 158346-21-5 HCAPLUS
CN Cadmium zinc selenide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	x	7782-49-2
Zn	x	7440-66-6
Cd	x	7440-43-9

L36 ANSWER 9 OF 11 HCAPLUS COPYRIGHT 2001 ACS
AN 1996:396051 HCAPLUS
DN 125:44782
TI **semiconductor** electroluminescent devices using indium gallium nitride active **layer**
IN Yagi, Katsumi; Kano, Takashi
PA Sanyo Denki Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01S003-18
ICS H01L033-00
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08064910	A2	19960308	JP 1994-198336	19940823

AB The **EL devices** consist of a SiC substrate coated with a SiC 1st **cladding layer**, an InGaN active **layer**, and a SiC 2nd **cladding layer**. The active **layer** may consist of an alternate laminate of InGaN **layers** with low In compn. and .gtoreq.1 InGaN **layer** with high In compn.
ST electroluminescent device indium gallium nitride; **EL device** indium gallium nitride; laser diode indium gallium nitride; LED indium gallium nitride blue; silicon carbide **EL device** laser
IT Electroluminescent **devices**
(indium gallium nitride blue-emitting **EL devices**)
IT Lasers
(**semiconductor**, indium gallium nitride blue-emitting **EL devices**)
IT **120994-23-2**, Gallium indium nitride ((Ga,In)N) **132238-81-4**, Indium gallium nitride (In0.1Ga0.9N) **153439-80-6**, Indium gallium nitride (In0.3Ga0.7N)
RL: DEV (Device component use); USES (Uses)
(active **layer**; indium gallium nitride blue-emitting **EL devices**)
IT 409-21-2, Silicon carbide, uses
RL: DEV (Device component use); USES (Uses)
(substrate and **cladding layer**; indium gallium nitride blue-emitting **EL devices**)
IT **120994-23-2**, Gallium indium nitride ((Ga,In)N) **132238-81-4**, Indium gallium nitride (In0.1Ga0.9N) **153439-80-6**, Indium gallium nitride (In0.3Ga0.7N)
RL: DEV (Device component use); USES (Uses)
(active **layer**; indium gallium nitride blue-emitting **EL devices**)
RN 120994-23-2 HCAPLUS
CN Gallium indium nitride ((Ga,In)N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
In	0 - 1	7440-74-6
Ga	0 - 1	7440-55-3

RN 132238-81-4 HCAPLUS
CN Gallium indium nitride (Ga0.9In0.1N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
In	0.1	7440-74-6
Ga	0.9	7440-55-3

RN 153439-80-6 HCAPLUS
CN Gallium indium nitride (Ga0.7In0.3N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
In	0.3	7440-74-6
Ga	0.7	7440-55-3

L36 ANSWER 10 OF 11 HCAPLUS COPYRIGHT 2001 ACS
AN 1996:396048 HCAPLUS
DN 125:44779
TI blue electroluminescent devices using gallium nitride compound **semiconductor**
IN Shakuda, Yukio
PA Rohm Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01L033-00
ICS H01S003-18
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08064870	A2	19960308	JP 1994-202477	19940826
	US 5825052	A	19981020	US 1995-515569	19950816
PRAI	JP 1994-202476		19940826		
	JP 1994-202477		19940826		

AB The devices comprising n-type and p-type GaN-base **semiconductor layers** and a GaN-base **semiconductor** (N is substituted with P and/or As) light-emitting region.
ST electroluminescent device gallium nitride; **EL device** gallium nitride; LED gallium nitride phosphide antimonide
IT Electroluminescent **devices**
(gallium nitride phosphide/antimonide **EL devices** with long emitting wavelength)
IT Group IIIA element pnictides
RL: DEV (Device component use); USES (Uses)
(gallium nitride phosphide/antimonide **EL devices** with long emitting wavelength)
IT 121764-98-5, Gallium nitride phosphide (ganp)
RL: DEV (Device component use); USES (Uses)
(active **layer**; gallium nitride phosphide/antimonide **EL devices** with long emitting wavelength)

IT **106097-44-3**, Aluminum gallium nitride ((Al,Ga)N)
RL: DEV (Device component use); USES (Uses)
(**cladding layer**; gallium nitride phosphide/antimonide **EL devices** with long emitting wavelength)

IT 7439-95-4, Magnesium, uses 7439-96-5, Manganese, uses 7440-21-3, Silicon, uses 7440-41-7, Beryllium, uses 7440-43-9, Cadmium, uses 7440-56-4, Germanium, uses 7440-66-6, Zinc, uses 7440-70-2, Calcium, uses 7704-34-9, Sulfur, uses 7782-49-2, Selenium, uses 13494-80-9, Tellurium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(dopant in active **layer**; gallium nitride phosphide/antimonide **EL devices** with long emitting wavelength)

IT **106097-44-3**, Aluminum gallium nitride ((Al,Ga)N)
RL: DEV (Device component use); USES (Uses)
(**cladding layer**; gallium nitride phosphide/antimonide **EL devices** with long emitting wavelength)

RN 106097-44-3 HCAPLUS
CN Aluminum gallium nitride ((Al,Ga)N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
Ga	0 - 1	7440-55-3
Al	0 - 1	7429-90-5

L36 ANSWER 11 OF 11 HCAPLUS COPYRIGHT 2001 ACS
AN 1996:365327 HCAPLUS
DN 125:22020
TI gallium nitride-base blue electroluminescent devices and their manufacture
IN Shakuda, Yukio
PA Rohm Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 6
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01S003-18
ICS H01L033-00
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08064912	A2	19960308	JP 1994-202479	19940826
	US 5814533	A	19980929	US 1995-509231	19950731
PRAI	JP 1994-187341		19940809		
	JP 1994-196851		19940822		
	JP 1994-196853		19940822		
	JP 1994-202479		19940826		

AB The devices have GaN-base compd. **semiconductor layers** on a R face or a M face of a sapphire substrate. The **semiconductor layers** may have (0001) side surface perpendicular to the substrate. The **semiconductor layers** may including p-type and n-type **layers**, consisting of a buffer **layer** (n-GaN), a bottom **cladding layer** (n-AlxGa1-xN, 0< x <1), an active **layer** (GayIn1-yN, 0< y .ltoreq.1), a top **cladding layer**

(p-AlxGa1-xN, 0< x <1), and a cap **layer** (p-GaN). The active **layer** may have a pair of (0001) edge faces for light-emitting faces. The device manuf. involves laminating the **semiconductor layers** with lattice match on a R/M face of a sapphire substrate, etching the laminate along the (0001) face, forming electrodes on the cap **layer** and the developed buffer **layer**, and dicing into chips. The buffer **layer** may consist of a low temp.-depositing 1st **layer** and a high temp.-depositing 2nd **layer**. The devices show improved oscillation efficiency.

ST electroluminescent device gallium nitride sapphire; **EL device** gallium nitride sapphire; LED gallium nitride sapphire substrate; laser diode gallium nitride sapphire

IT Electroluminescent **devices**
(manuf. of gallium nitride **EL devices** on sapphire substrate)

IT Group IIIA element pnictides
RL: DEV (Device component use); USES (Uses)
(manuf. of gallium nitride **EL devices** on sapphire substrate)

IT Lasers
(**semiconductor**, manuf. of gallium nitride **EL devices** on sapphire substrate)

IT **120994-23-2**, Gallium indium nitride ((Ga,In)N)
RL: DEV (Device component use); USES (Uses)
(active **layer**; manuf. of gallium nitride **EL devices** on sapphire substrate)

IT 25617-97-4, Gallium nitride
RL: DEV (Device component use); USES (Uses)
(buffer **layer** and cap **layer**; manuf. of gallium nitride **EL devices** on sapphire substrate)

IT **106097-44-3**, Aluminum gallium nitride ((Al,Ga)N)
RL: DEV (Device component use); USES (Uses)
(**cladding layer**; manuf. of gallium nitride **EL devices** on sapphire substrate)

IT 1344-28-1, Aluminum oxide, uses
RL: DEV (Device component use); USES (Uses)
(manuf. of gallium nitride **EL devices** on sapphire substrate)

IT **120994-23-2**, Gallium indium nitride ((Ga,In)N)
RL: DEV (Device component use); USES (Uses)
(active **layer**; manuf. of gallium nitride **EL devices** on sapphire substrate)

RN 120994-23-2 HCAPLUS
CN Gallium indium nitride ((Ga,In)N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
In	0 - 1	7440-74-6
Ga	0 - 1	7440-55-3

IT **106097-44-3**, Aluminum gallium nitride ((Al,Ga)N)
RL: DEV (Device component use); USES (Uses)
(**cladding layer**; manuf. of gallium nitride **EL devices** on sapphire substrate)

RN 106097-44-3 HCAPLUS
CN Aluminum gallium nitride ((Al,Ga)N) (9CI) (CA INDEX NAME)

Component	Ratio	Component

		Registry Number
N	1	17778-88-0
Ga	0 - 1	7440-55-3
Al	0 - 1	7429-90-5

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L37          922 SEA FILE=WPIX ABB=ON  PLU=ON  (ELECTROLUMIN? OR EL) AND
                 SEMICONDUCT?
L38          525 SEA FILE=WPIX ABB=ON  PLU=ON  ?LAYER? AND L37
L39          146 SEA FILE=WPIX ABB=ON  PLU=ON  (CNC OR ?CRYSTAL?) AND L38
L40           16 SEA FILE=WPIX ABB=ON  PLU=ON  ?DOPED AND L39
L41            9 SEA FILE=WPIX ABB=ON  PLU=ON  (ZN OR ZINC OR MG OR MAGNESIUM
                 OR ALUMINIUM OR ALUMINUM OR AL OR GALLIUM OR GA) AND L40


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YOU HAVE REQUESTED DATA FROM 9 ANSWERS - CONTINUE? Y/(N):y

L41  ANSWER 1 OF 9  WPIX   COPYRIGHT 2001   DERWENT INFORMATION LTD
AN   2001-212813 [22]   WPIX
DNN  N2001-152036       DNC C2001-063597
TI   Semiconductor device, e.g. electroluminescent display
     device, comprises three wirings, three insulating films,
     semiconductor film, and gate electrode.
DC   L03 P81 P85 T04 U13 U14
IN   ISOBE, A; SHIBATA, H
PA   (SEME) SEL SEMICONDUCTOR ENERGY LAB; (SEME) SEMICONDUCTOR ENERGY LAB
CYC  27
PI   EP 1081676    A1 20010307 (200122)* EN   38p    G09G003-36
         R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT
            RO SE SI
     JP 2001144301 A  20010525 (200136)        19p    H01L029-786
     CN 1286493    A  20010307 (200140)               H01L021-00
ADT  EP 1081676 A1 EP 2000-118783 20000830; JP 2001144301 A JP 2000-253571
     20000824; CN 1286493 A CN 2000-126319 20000830
PRAI JP 1999-246798   19990831
IC   ICM  G09G003-36; H01L021-00; H01L029-786
     ICS  G02F001-1343; G02F001-1345; G02F001-1362; G02F001-1368; H01L021-3205;
          H01L021-768; H01L021-822; H01L027-04; H04N005-66
AB   EP   1081676 A UPAB: 20010421
     NOVELTY - A semiconductor device comprises three wirings, three
     insulating films, a gate electrode and a semiconductor film. The
     second wiring and the gate electrode are connected to the first wiring on
     the second insulating film. The third wiring is connected to the
     semiconductor film on the third insulating film.
          DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a
     method of manufacturing a semiconductor device comprising
     forming in sequence (i) the first wiring on a substrate (101) having an
     insulating surface, (ii) the first insulating film (103) on the first
     wiring, (iii) the semiconductor film (104) on the first
     insulating film, the second insulating film (105) on the
     semiconductor film, (iv) a first contact hole reaching the first
     wiring, (v) the gate electrode (106) on the second insulating film
     overlapping a portion of the semiconductor film and connected to
     the first wiring through the first contact hole, (vi) the third insulating
     film (108) on the gate electrode, (vii) a second contact hole (100a)
     reaching the semiconductor film, and (viii) the third wiring on
     the third insulating film connected to the semiconductor film
     through the second contact hole. The first contact hole is formed by
     selectively etching the first and second insulating films. The second
     contact hole is formed by selectively etching the second and third
     insulating films.
          USE - As a semiconductor device, e.g. video camera, digital
     camera, projector, head-mount display, car navigation system, personal
     computer, information processing terminal or preferably an
     electroluminescent (EL) display device.
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ADVANTAGE - The device does not require a sample hold capacitor in a portion of the peripheral circuit from the fact that the parasitic capacitance of the signal line increases, thus improving the holding characteristics of the signal line electric potential. The variations in the electric potential of the capacitor wiring caused by a writing-in electric current of a neighboring pixel can be avoided, thus obtaining satisfactory display images.

DESCRIPTION OF DRAWING(S) - The figure shows a cross-sectional structure of an active matrix type liquid **crystal** display device.

Contact hole 100a
Substrate 101
Scanning line 102
First insulating film 103
Semiconductor film 104
Second insulating film 105
Gate electrode 106
Third insulating film 108

Dwg.4/19

TECH EP 1081676 A1 UPTX: 20010421

TECHNOLOGY FOCUS - ELECTRONICS - Preferred Components: A storage capacitor is formed with the second insulating film in a region where the second wiring and the **semiconductor** film overlap via the second insulating film. An impurity element imparting a conductivity type is **doped** into the region of the **semiconductor** film where the second wiring overlaps via the second insulating film. The device also comprises an electrode and a pixel electrode. The electrode is connected to the **semiconductor** film and the pixel electrode is connected to the electrode on the third insulating film. The first wiring is arranged orthogonal to the second or third wiring. The gate electrode is formed on a different **layer** from the first wiring. It is patterned into an island shape. The first wiring is a scanning line (102), the second wiring is a capacitor wiring, and the third wiring is a signal line. The second insulating film is a gate insulating film.

TECHNOLOGY FOCUS - INORGANIC CHEMISTRY - Preferred Composition: The gate electrode comprises a film having a principal constituent which is polysilicon, tungsten, tungsten silicide, **aluminum**, tantalum, chromium or molybdenum; or a lamination film of a combination of these elements. The principal constituent has been **doped** with the impurity element.

FS CPI EPI GMPI
FA AB; GI
MC CPI: L03-G05A; L03-G05B; L04-C14A
EPI: T04-H03B; T04-H03C2A; U13-D03A; U14-H01A; U14-K01A2B

L41 ANSWER 2 OF 9 WPIX COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 2000-239417 [21] WPIX
DNN N2000-179770 DNC C2000-073042
TI **Semiconductor** device having thin film transistor with lightly **doped** drain region has low density impurity region contacting channel formation region and high density impurity region contacting low density impurity region.
DC L03 U11 U12 U14
IN KUWABARA, H; NAKAJIMA, S; YAMAZAKI, S
PA (SEME) SEL SEMICONDUCTOR ENERGY LAB; (SEME) SEMICONDUCTOR ENERGY LAB
CYC 26
PI EP 989614 A2 20000329 (200021)* EN 30p H01L029-786
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI

JP 2000156504 A 20000606 (200035) 18p H01L029-786
ADT EP 989614 A2 EP 1999-117347 19990903; JP 2000156504 A JP 1998-251675 19980904
PRAI JP 1998-251675 19980904
IC ICM H01L029-786
ICS G09F009-33; H01L021-336
AB EP 989614 A UPAB: 20000502
NOVELTY - Gate insulating film contacts gate line formed on insulating surface. Channel region is formed over gate line with intervening gate insulating film. Low density impurity region contacts channel formation region. High density impurity region contacts low density impurity region. Organic resin **doped** with tri- or penta-valent impurity contacts protective film contacting channel formation region

DETAILED DESCRIPTION - The gate line has a single- or multi-**layer** structure and is made of an element selected from tantalum, copper, chromium, **aluminum**, molybdenum, titanium, and silicon or a material primarily constituted by silicon **doped** with a p-type or n-type impurity.

The tri- or penta-valent impurity is phosphorus or boron, respectively, and the density of the impurity in the organic resin is 1 multiply 1019 atoms/cm3.

The organic resin has photosensitivity.

A catalytic element comprising one or more of Ni, Fe, Co, Pt, Cu and Au, or preferably Ge or Pb, is included in the high density impurity region.

INDEPENDENT CLAIMS are given for:

(a) a **semiconductor** device based on that above and where a drain region is constituted by a first high density impurity region and a source region is constituted by a second high density impurity region formed on the other side of the channel formation region;

(b) a **semiconductor** device based on that above and where first and second low density impurity regions are in contact with the channel formation region, high density impurity region contacts the first and second low density impurity regions, and the widths of the first and second low density impurity regions are different in the direction of the channel length; and

(c) methods for manufacturing the **semiconductor** device.

USE - The **semiconductor** device includes a **semiconductor** circuit comprising a microprocessor, signal processing circuit or high frequency circuit, or comprises an electro-optical device, including a liquid **crystal** display, **EL** display, EC display or image sensor, or electronic equipment, including a video camera, digital camera, projector, goggle type display, navigation system, personal computer or personal digital assistant (all claimed).

ADVANTAGE - A lightly **doped** drain (LDD) region can be formed with fewer masks (maximum of seven masks) than required in the prior art process (minimum of eight masks). The design of a second mask is appropriately determined in accordance with requirements associated with the circuit configuration to make it possible to form a desired LDD region on both sides or one side of the channel formation region of a TFT. The **semiconductor** device can be manufactured with high mass productivity, reliability and reproducibility by very simple manufacturing steps.

DESCRIPTION OF DRAWING(S) - The drawing is a sectional view showing an example of a **semiconductor** device according to a first embodiment of the invention.

Substrate 100

Underlying film 101

Gate line 102

Gate insulating film 103
First and second protective films 108, 109
Masks 110a, 110b, 110c, 110d, 113b
Channel formation region 112
n+- type region 114
n-type region (LDD region) 115
p-type region 117
Layer insulating films 118, 125, 129
Extraction line 126
Lead line 127
Dwg.1/13

FS CPI EPI
FA AB; GI
MC CPI: L03-G05; L04-C02; L04-E01A; L04-E05; L04-E05A
EPI: U11-C04E1; U11-C18A3; U12-B03A; U12-D02A3; U14-K01A2B; U14-K01A5
DRN 1666-U

L41 ANSWER 3 OF 9 WPIX COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1999-526267 [44] WPIX
DNN N1999-389664 DNC C1999-154624
TI Ultra-thin **semiconducting** film production method, useful for making polymeric quinoline-based light emitting diodes.
DC E12 E24 L03 P54 U11 U12
IN PAPADIMITRAKOPOULOS, F
PA (UYCO-N) UNIV CONNECTICUT
CYC 1
PI US 5946550 A 19990831 (199944)* 19p H01L035-24
ADT US 5946550 A US 1997-818382 19970314
PRAI US 1997-818382 19970314
IC ICM H01L035-24
ICS B23B027-00; H01L033-00
AB US 5946550 A UPAB: 19991026
NOVELTY - Ultra-thin **semiconducting** films are generated by a self-assembly method in which elongated chains of metallo-bisquinoline chelates are formed in sequence on the surface of a substrate to give controlled development of film thickness, minimize contaminant entrapment and provide a pinhole-free structure.

DETAILED DESCRIPTION - A method for producing an ultra-thin **semiconducting** film comprises:

(a) contacting a substrate having a reactive functionalized surface with a divalent or trivalent chelating metal reagent;

(b) contacting the resultant metallo-functionalized surface with bisquinoline or a bisquinoline telomer to produce a deposit of an oligomeric metallo-bisquinoline chelate having the general formula (I) (from divalent cation) or (II) (from trivalent cation); and

(c) contacting this deposit with chelating metal reagent of (a), then with bisquinoline of (b), and repeating this step until the desired deposit thickness is obtained.

R = a group of formula (i) (attached at the bond marked asterisk).

USE - In the manufacture of **semiconducting** devices (claimed), particularly polymeric quinoline-based light emitting diodes, transistors and **electroluminescent** panels by means of self-assembly techniques.

ADVANTAGE - The method allows denser packing, direct chemical bonding to the substrate, high temperature stability and high uniformity of films and the construction of large size devices of varied shape and complexity, together with control of device color, structure and **crystallinity**.

DESCRIPTION OF DRAWING(S) - The drawing illustrates the growth of **zinc** bisquinoline chains in the self-assembly method.

Dwg.1/12

TECH US 5946550 A UPTX: 19991026

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Components: The substrate has a base and metallic oxide **layer** (**doped** with a fluorescent dye) and an interposed hole-transporting **layer**. The substrate is exposed to a hydroxyl, carboxyl, amino acid or thio compound (preferably concentrated sodium hydroxide solution). The chelating metal reagent is of formula (III) or (IV).

(CH3-CH2)nMn (III)

MXy (IV)

n = the valency of the metal; and

X = halogen or a carboxyl-containing ligand.

The chelating metal reagent is dissolved in an organic solvent and comprises a bisquinoline telomer with the chelating metal near the ends of the telomer chain.

Preferred Solvent: The chelating reaction is conducted in organic solvent (preferably tetrahydrofuran, benzene or toluene) or in water. Preferred Conditions: Excess reactants are removed from substrate and deposits by cleaning the surface with solvent(s) between stages.

ABEX US 5946550 A UPTX: 19991026

EXAMPLE - Hydroxy-functionalized indium/tin oxide substrates were dipped in an organometallic solution of diethyl zinc in tetrahydrofuran (10-4 - 10-2 molar concentration) for about 2 minutes. After rinsing in a THF bath, the organometallic functionalized surface was dipped in a THF solution of bisquinoline (10- 4 - 10-2 molar concentration) for a further 2 minutes, then rinsed with solvent. The controlled formation of layers effectively eliminated pinholes.

DEFINITIONS - Preferred Definitions:

M = zinc, beryllium, magnesium, aluminum, gallium or indium.

KW [1] 526-0-0-0 CL; 351-0-0-0 CL; 0006-64701 CL; 0006-64702 CL; 0006-64703 CL; 230836-0-0-0 CL PRD; 0006-64704 CL PRD; 230831-0-0-0 CL

FS CPI EPI GMPI

FA AB; GI; DCN

MC CPI: E05-B01; E05-D; E05-L03C; E05-L03D; E24-A03; E25-E01; E34-A; E34-B03; E35-C; E35-F; L03-C02C; L04-A04; L04-E01

EPI: U11-C01J5; U12-A01A1X

DRN 0659-U

CMC UPB 19991026

M3 *01* D023 D029 D621 D699 H4 H402 H442 H8 M1 M114 M280 M320 M412 M512 M520 M530 M540 M782 M904 M905 Q454 Q613 R023 R043
DCN: RA0N3L-K; RA0N3L-M

M3 *02* A430 A923 M210 M212 M250 M282 M320 M411 M510 M520 M530 M540 M620 M782 M904 M905 Q454 Q613 R023 R043
DCN: R05142-K; R05142-M

M3 *03* A313 A923 M210 M212 M250 M283 M320 M411 M510 M520 M530 M540 M620 M782 M904 M905 M910 Q454 Q613 R023 R043
DCN: R00659-K; R00659-M

M3 *04* A204 A212 A313 A331 A349 A430 A923 M210 M212 M250 M282 M283 M320 M411 M510 M520 M530 M540 M620 M782 M904 M905 Q454 Q613 R023 R043
DCN: 0006-64701-K; 0006-64701-M

M3 *05* A204 A212 A313 A331 A349 A430 A940 C000 C100 C730 C801 C803 C804 C805 C806 C807 M411 M782 M904 M905 Q454 Q613 R023 R043
DCN: 0006-64702-K; 0006-64702-M

M3 *06* A204 A212 A313 A331 A349 A430 A960 C710 J0 J011 J1 J171 M210 M211 M212 M213 M214 M215 M216 M220 M221 M222 M223 M224 M225 M226 M231 M232 M233 M262 M281 M320 M411 M510 M520 M530 M540 M620 M630 M782 M904 M905 Q454 Q613 R023 R043
DCN: 0006-64703-K; 0006-64703-M

M3 *07* A430 A960 C710 D023 D029 D621 D699 H4 H402 H442 H8 M1 M114

M280 M320 M411 M512 M520 M530 M540 M630 M720 M904 M905 N104 N209
N253 N512 Q454 Q613 R043
DCN: RA0N3Q-K; RA0N3Q-P

M3 *08* A204 A212 A313 A331 A349 A430 A960 C710 C801 C802 C803 C804 C805
C806 C807 D023 D029 D621 D699 H4 H402 H442 H8 M1 M114 M280
M320 M411 M512 M520 M530 M540 M630 M720 M904 M905 N104 N209 N253
N512 Q454 Q613 R043
DCN: 0006-64704-K; 0006-64704-P

M4 *07* A430 A960 C710 D023 D029 D621 D699 H4 H402 H442 H8 M1 M114
M280 M320 M411 M512 M520 M530 M540 M630 M720 M904 M905 N104 N209
N253 N512 Q454 Q613 R043 W002 W030 W335
DCN: RA0N3Q-K; RA0N3Q-P

M4 *08* A204 A212 A313 A331 A349 A430 A960 C710 C801 C802 C803 C804 C805
C806 C807 D023 D029 D621 D699 H4 H402 H442 H8 M1 M114 M280
M320 M411 M512 M520 M530 M540 M630 M720 M904 M905 N104 N209 N253
N512 Q454 Q613 R043 W002 W030 W335
DCN: 0006-64704-K; 0006-64704-P

L41 ANSWER 4 OF 9 WPIX COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1989-008912 [02] WPIX
DNN N1989-006827 DNC C1989-004124
TI Thin film **electroluminescence** device - with good electro-optical characteristics and threshold voltage lower than 100 volts.
DC L03 Q71 U11 U14
IN GALLUZZI, F; ROMEO, N; SBERVEGLIE, G
PA (ENIE) ENIRICERCHE SPA; (ENIE) ENICHEM SPA
CYC 15
PI EP 297644 A 19890104 (198902)* EN 9p
R: AT BE CH DE ES FR GB GR LI LU NL SE
JP 01030197 A 19890201 (198911)
IT 1221924 B 19900823 (199217)
US 5107174 A 19920421 (199219) 6p
ADT EP 297644 A EP 1988-201182 19880609; JP 01030197 A JP 1988-161140 19880630; IT 1221924 B IT 1987-21141 19870701; US 5107174 A US 1990-477119 19900207
PRAI IT 1987-21141 19870701
REP 4.Jnl.Ref; A3...9028; EP 104846; EP 195395; No-SR.Pub
IC C23C014-34; F21K000-00; H01L021-20; H05B033-10; H05B033-26
AB EP 297644 A UPAB: 19930923
A thin film **electroluminescent** device comprises: (a) an amorphous support pref. glass or ceramic, on which are successively deposited; (b) a metal **layer** comprising 2 metals pref. selected from Pb, Sn, Bi, Sb, **Al**, **Ga**, Si, Ag, In, Au, having different melting points and capable of forming a homogeneous solid soln. with a **multicrystal** structure, with columnar (tabular) grains with average side dimensions equal to, or larger than, 1 micron, up to 500 micron and thicker than 0.2 microns; (c) a luminescent **layer** of **Zn** sulphide or **Zn** selenide **doped** with Mn and having the same structural characteristics except for thickness less than 2 microns; (d) an insulating **layer** pref. one of Y2O3, Al2O3, SiN4, BaTiO3, PbTiO3, SrTiO3, greater than 0.2 microns thick; (e) a conductive **layer** pref. In2O3, SnO2, ITO, or ZnO, 0.1 micron thick. Pref. the metal **layer** is **Al**/Si, Pb/Sn, **Al**/Ge, **Al**/**Ga** or Bi/Sn.

USE/ADVANTAGE - Process for preparing thin films, **crystalline** metals or **semiconductors** on amorphous substrates. Particularly suitable for **electroluminescence** devices incorporating a metal **layer** and a luminescent **layer**, having good electro-optical characteristics and capable of emitting luminescence with threshold voltages lower than 100 V.

0/2
ABEQ US 5107174 A UPAB: 19930923
Thin film **electroluminescent** device comprises a) an amorphous support b) a binary alloy **layer** deposited on a); c) a luminescent **layer** deposited on **layer** b); d) an insulating **layer** deposited on **layer** c); and e) a conductive **layer** deposited on **layer** d). **Layer** b) further comprises two different metals, or a metal and a **semiconductor**. The two different metals, or the metal and the **semiconductor** i) have m.pts. different from one another and ii) can form a homogeneous solid soln. having a multi **crystal** structure having columnar grains. The length and width of the grains are not less than 1 micron and not more than 500 microns, and the depth of the grains is not less than 0.2 micron. **Layer** c) comprises a **layer** of **zinc** sulphide or **zinc** selenite, comprising manganese and having a multi **crystal** structure having columnar grains. The grains range in size from 1-500 microns and their depth is not more than 2 microns.

ADVANTAGE - New device has good electro-optical characteristics and a threshold voltage for luminescence below 100 volts.

FS CPI EPI GMPI
FA AB
MC CPI: L03-H04A
EPI: U11-C01A1; U11-C01J7; U11-C18B; U14-J
DRN 1515-U; 1520-U; 1531-U; 1544-U

L41 ANSWER 5 OF 9 WPIX COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1988-235903 [34] WPIX
DNN N1988-179203 DNC C1988-105571
TI Higher efficiency **electroluminescent layer** - contains mixed **crystals** of **zinc**-cadmium sulphide-selenide with compsn. which may vary through the **layer** thickness.
DC L03 U11 U14
IN MULLER, G O; MULLERMACH, R; REINSPERGE, G U
PA (DEAK) AKAD WISSENSCHAFTEN DDR
CYC 1
PI DD 255429 A 19880330 (198834)* 2p
ADT DD 255429 A DD 1986-298111 19861222
PRAI DD 1986-298111 19861222
IC H05B033-14
AB DD 255429 A UPAB: 19930923
The material, consisting of luminescent **semiconductor** **doped** with active luminescence centres, is sandwiched between insulator **layers** and electrodes. Its compsn. is (ZnxCd1-x)(Sy Se1-y) in which x is 0-1 and y is 0.4-1. The values of x and y can vary as a function of the depth in the **layer**. The dopants are pref. transition metals and/or stable molecules of transition metals and/or rare earth elements.

USE/ADVANTAGE - The material gives a brighter display due to an increase capture rate by luminescent centres. The **crystal** system gives a better opportunity for building in luminescent centres without causing **crystal** defects.

0/0
FS CPI EPI
FA AB
MC CPI: L03-G05; L03-H04A
EPI: U11-A09; U14-J

L41 ANSWER 6 OF 9 WPIX COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1988-228969 [33] WPIX

DNN N1988-174219 DNC C1988-102270
TI Vacuum vapour deposition of thin film using unsintered substrate - giving planar smooth film without particle scattering, useful in transistor and LED prodn..
AW LIGHT EMIT DIODE.
DC L03 U11 U14
IN HONDA, N
PA (NSMO) NISSAN MOTOR CO LTD
CYC 3
PI DE 3803189 A 19880811 (198833)* 5p
JP 63190164 A 19880805 (198837)
DE 3803189 C 19900208 (199006)
US 4976988 A 19901211 (199101)
JP 2529563 B2 19960828 (199639) 3p C23C014-30
ADT DE 3803189 A DE 1988-3803189 19880203; US 4976988 A US 1990-511970 19900417; JP 2529563 B2 JP 1987-21780 19870203
FDT JP 2529563 B2 Previous Publ. JP 63190164
PRAI JP 1987-21780 19870203
IC C23C014-30; H01L021-28; H05B033-10
ICM C23C014-30
ICS H01L021-28; H05B033-10; H05B033-14
AB DE 3803189 A UPAB: 19970502
In vacuum vapour deposition of a thin film on a substrate by heating a sublimable source material (I) in vacuo, the novelty is that (I) is heated in vacuo in the unsintered state.

(I) is in **crystalline** or amorphous form and consists of a cpd. **semiconductor** of a gp. II and a gp. VI element. (I) is the source material for an **electroluminescent** phosphor, opt. in conjunction with an activator.

USE/ADVANTAGE - A planar thin film with a smooth surface can be obtd., without severe scattering of fine (I) particles in the vacuum chamber. The technique is useful in the prodn. of thin films of **ZnS**, ZnSe, CdS and CaSe used as thin film transistors or light-emitting films of thin film **electroluminescent** devices. Dwg.1/3

ABEQ DE 3803189 C UPAB: 19930923
In the **layer** prodn. by electron beam evapn. of a sublimable source material (I), (I) used is an unsintered, **crystalline** source material produced by CVD. Pref. a II-VI junction semicondutor is used. Pref. an **electroluminescence**-fluorescent material (II) is used. Pref. simultaneously with (II), an activation agent is thermally vapour deposited.

ADVANTAGE - Undesired sputtering of solid fine particles of (I), in the vacuum chamber, is reduced.

ABEQ US 4976988 A UPAB: 19930923
A thin film of an **electroluminescent** phosphor (I) is deposited on a substrate. (I) is **ZnS doped** with a metal element that serves as an activator. Firstly, the substrate is placed in a vacuum chamber and there are separately placed in the chamber a) an unsintered **crystalline** mass of **ZnS**, prepd. by a chemical vapour deposition method, a Czochralsici method, a floating zone method or a melting zone method, or a melting-solidifying method, and b) the metal element. The **crystalline** mass of **ZnS** is then heated by an electron beam in vacuum, thereby evaporating the **crystalline** mass of **ZnS**, whereby scattering of fine particles of **ZnS** is reduced. Finally, the metal element is heated in vacuum so as to evaporate the metal element, simultaneously with the evapn. of the **ZnS**.

ADVANTAGE - A thin film, having an even and smooth surface, can be deposited on a substrate, without serious influence of scattering of fine

particles of the source material in the vacuum chamber.
FS CPI EPI
FA AB; GI
MC CPI: L03-H04A; L04-E01A
EPI: U11-C01A1; U11-C01J7; U14-J

L41 ANSWER 7 OF 9 WPIX COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1978-19928A [11] WPIX
TI **Electroluminescent monocrystalline gallium** nitride **semiconductor** - with partially compensated **layer** below fully compensated active **layer**.
DC L03 U12
IN BOULOU, M; JACOB, G M
PA (PHIG) PHILIPS GLOEILAMPENFAB NV
CYC 7
PI DE 2738329 A 19780309 (197811)*
JP 53034486 A 19780331 (197819)
FR 2363900 A 19780505 (197822)
FR 2382103 A 19781027 (197848)
GB 1589351 A 19810513 (198120)
CA 1098609 A 19810331 (198121)
US 4268842 A 19810519 (198123)
JP 57035594 B 19820729 (198234)
IT 1084205 B 19850525 (198618)
DE 2738329 C 19880225 (198808)
PRAI FR 1976-26777 19760906; FR 1977-5770 19770228
IC H01L021-20; H01L031-12; H01L033-00
AB DE 2738329 A UPAB: 19930901
Electroluminescent semiconductor is based on a **monocrystalline** substrate with an n-GaN **layer**; an active GaN **layer doped** with a doping element for the formation of acceptor impurities at least completely compensating the natural donor impurities; a surface electrode in contact with the active **layer**; and also provision for contacting the n-conductive **layer**.
Improvement is that (part of) the n-conductive **layer**, which is parallel to and bounds the active **layer**, is **doped** for less than complete compensation of these doping elements, the net concn. of the resultant impurities is small (pref. of the order of tenths to millionths) w.r.t. the concn. of natural impurities and these are almost homogeneous in the stated part of the **layer**.
The net concn. in the material can be varied during epitaxial growth and more accurate and easily control is possible.
FS CPI EPI
FA AB
MC CPI: L03-D01D; L03-D04B

L41 ANSWER 8 OF 9 WPIX COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1977-18254Y [11] WPIX
TI Silicon carbide electro-luminescent diode - having linear dependence of emission on current, and operating at very low temps..
DC L03 U12
PA (VALT-I) VALTER-MASLAKOVETS
CYC 1
PI CA 1006256 A 19770301 (197711)*
PRAI CA 1973-171957 19730522
IC H01L000-01
AB CA 1006256 A UPAB: 19930901
Semiconductor light source consists of (i) a N2-**doped** n-type SiC **crystal** with an uncompensated majority donor concn.

of (0.8-5)x1018/cc.; (ii) a p-n junction **electroluminescent** in the visible range; (iii) a p-**layer** 0.1-3 mu thick **doped** with 2x1018-2x1020/cc. acceptor impurities; (iv) a base **layer** in the SiC **crystal** having an uncompensated donor concn. of (0.8-5)x1018/cc.; and (v) a central **layer** 0.05-1 mu thick between base and p-**layers** and **doped** with (0.1-2)x1018/cc. donor and acceptor luminescence activators. Resistivity of central **layer** is greater than base **layer** by >=3 orders of magnitude.

The p-**layer** acceptor impurity is pref. **Al** or **Ga**; luminescence activators for donor type are pref. O and N, and of acceptor type are pref. B, or one of Be, **Al**, **Ga** and Sc.

Devices are used in visual displays, data recorders computers, display boards, digital instruments etc. They have a linear brightness-current characteristic, and operates at high current densities. They have low increase in forward voltage drop and low drop in radiation efficiency at ambient temps. done to -60 degrees C.

FS CPI EPI
FA AB
MC CPI: L03-D03E; L03-D04

L41 ANSWER 9 OF 9 WPIX COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1976-01250X [01] WPIX
TI **Electroluminescent semiconductor** device - with **doped** region provided with current conductor contg. tin-**doped** indium oxide **layer.**
DC L03 U12
PA (PHIG) PHILIPS GLOEILAMPENFAB NV
CYC 7
PI NL 7407812 A 19751216 (197601)*
DE 2523963 A 19760102 (197601)
FR 2275031 A 19760213 (197614)
CH 588168 A 19770531 (197727)
GB 1503545 A 19780315 (197811)
CA 1030643 A 19780502 (197820)
IT 1038801 B 19791130 (198011)
PRAI NL 1974-7812 19740612
IC H01L033-00
AB NL 7407812 A UPAB: 19930901

Electroluminescent semiconductor device has a **monocrystalline semiconductor** body of a III-V cpd., e.g. **gallium** arsenide phosphide, contg. >=1 doping region that forms an **electroluminescent** pn-transition with the adjoining material of the **semiconductor** body, and is provided with a current conductor contg. a tin-**doped** indium oxide **layer.** The conductor has an acceptable transparency, and low lateral resistance. Homogeneous emission of radiation over the whole **doped** region is obtd. Process is simple and cheap.

FS CPI EPI
FA AB
MC CPI: L03-D04B

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L37         922 SEA FILE=WPIX ABB=ON  PLU=ON  (ELECTROLUMIN? OR EL) AND
                SEMICONDUCT?
L43        9592 SEA L37
L44        3730 SEA ?LAYER? AND L43
L45          82 SEA L44 AND (CNC OR NANOCRYSTAL?)
L46          14 SEA (P-DOP? OR DOP?) AND L45
L47           4 SEA L46 AND (ZN OR ZINC OR MG OR MAGNESIUM OR ALUMINIUM OR
                ALUMINUM OR AL OR GALLIUM OR GA)

=> d all 1-4

L47  ANSWER 1 OF 4  INSPEC  COPYRIGHT 2001 IEE
AN   1999:6361445  INSPEC     DN  A1999-21-6146-012
TI   Ion beam synthesis of compound nanoparticles in SiO2.
AU   Perez-Rodriguez, A.; Garrido, B.; Bonafos, C.; Lopez, M.; Gonzalez-Varona,
     O.; Monrante, J.R. (Dept. d'Electron., Barcelona Univ., Spain);
     Montserrat, J.; Rodriguez, R.
SO   Journal of Materials Science: Materials in Electronics (July 1999) vol.10,
     no.5-6, p.385-91. 22 refs.
     Published by: Kluwer Academic Publishers/Chapman & Hall
     Price: CCCC 0957-4522/99/$15.00
     CODEN: JSMEEV  ISSN: 0957-4522
     SICI: 0957-4522(199907)10:5/6L.385:BSCN;1-X
     Conference: 2nd International Conference on Materials for
     Microelectronics. Bordeaux, France, 14-15 Sept 1998
DT   Conference Article; Journal
TC   Practical; Experimental
CY   United States
LA   English
AB   The ion beam synthesis of group IV (SiC) and II-VI (ZnS)
     compound nanoparticles in SiO2 layers is studied. These systems
     are potentially interesting for optoelectronic applications such as
     electroluminescent devices emitting in the visible and UV range.
     The combination of structural (transmission electron microscopy, electron
     and X-ray diffraction), optical (infrared and raman spectroscopies,
     optical absorption and photoluminescence) and physico-chemical (X-ray
     photoelectron spectroscopy, secondary ion mass spectroscopy) techniques
     have been used to identify the phases formed and to correlate the optical
     behaviour of the layers with their microstructure. The first
     part is dedicated to the synthesis of luminescent SiO2 layers
     co-implanted with Si and C. The presence of regions with different
     composition in terms of C content gives rise to the formation of 3 types
     of nanoparticles (Si, C and SiC) leading to three intense, simultaneous
     and independent emission bands covering the whole visible range. A second
     part is dedicated to the synthesis of Mn doped ZnS
     nanocrystals. We have succeeded in synthesizing ZnS
     nanocrystals by sequential ion implantation in SiO2. The
     structural characterization of the annealed layers shows
     ZnS precipitates having a wurtzite-2H structure and with a quite
     narrow distribution of sizes. This population of nanocrystals is
     organized in two layers parallel to the free surface, as a
     consequence of a pure Ostwald ripening process or as a result of the
     implantation damage distribution. The optical analysis of samples
     co-implanted with Mn shows the presence of a yellow-green and intense
     photoluminescence corresponding to an intra-Mn2+ transition, which
     demonstrates the effective doping with Mn of the ZnS
     precipitates.
CC   A6146 Structure of solid clusters, nanoparticles, and nanostructured
     materials; A7125W Electronic structure of solid clusters and
```

nanoparticles; A6180J Ion beam effects; A7860F Electroluminescence (condensed matter); A7830G Infrared and Raman spectra in inorganic crystals; A7840H Visible and ultraviolet spectra of other nonmetals; A7855H Photoluminescence in other inorganic materials

CT **ELECTROLUMINESCENCE**; ELECTRON DIFFRACTION; INFRARED SPECTRA; ION BEAM EFFECTS; NANOSTRUCTURED MATERIALS; PHOTOLUMINESCENCE; RAMAN SPECTRA; **SEMICONDUCTOR DOPED** GLASSES; SILICON COMPOUNDS; TRANSMISSION ELECTRON MICROSCOPY; VISIBLE SPECTRA; X-RAY DIFFRACTION; X-RAY PHOTOELECTRON SPECTRA

ST ion beam synthesis; compound nanoparticles; SiO2; optoelectronic applications; **electroluminescent devices**; visible; UV range; transmission electron microscopy; X-ray diffraction; electron diffraction; infrared spectra; Raman spectra; optical behaviour; emission bands; wurtzite-2H structure; free surface; implantation damage distribution; pure Ostwald ripening process; optical analysis; **effective doping**

CHI SiO2 bin, O2 bin, Si bin, O bin

ET O*Si; SiO2; Si cp; cp; O cp; C*Si; SiC; C cp; S*Zn; ZnS; Zn cp; S cp; Si; C; Mn; H; Mn2+; Mn ip 2; ip 2; SiO; O

L47 ANSWER 2 OF 4 INSPEC COPYRIGHT 2001 IEE

AN 1999:6204270 INSPEC DN A1999-09-7865K-023; B1999-05-4260-012

TI **Electroluminescence** and cathodoluminescence from inorganic CdSe **nanocrystals** embedded in thin films.

AU Mattoussi, H. (Dept. of Mater. Sci. & Eng., MIT, Cambridge, MA, USA); Rodriguez-Viejo, J.; Jensen, K.F.; Bawendi, M.G.; Rubner, M.F.

SO Proceedings of the SPIE - The International Society for Optical Engineering (1998) vol.3476, p.310-21. 32 refs.
Published by: SPIE-Int. Soc. Opt. Eng
Price: CCCC 0277-786X/98/$10.00
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(1998)3476L.310:ECFI;1-E
Conference: Organic Light-Emitting Materials and Devices II. San Diego, CA, USA, 21-23 July 1998
Sponsor(s): SPIE

DT Conference Article; Journal

TC Practical; Experimental

CY United States

LA English

AB **Electroluminescence** (**EL**) from heterostructure devices made of organic poly (phenylene vinylene), PPV, and inorganic **semiconductor** CdSe **nanocrystals** have been investigated, along with cathodoluminescence (CL) from thin films of **ZnS doped** with CdSe-**ZnS** core-shell **nanocrystals**.
In the **EL** devices, the organic PPV structure, built next to the anode using the technique of molecular **layer**-by-**layer** sequential adsorption, serves as the hole transport **layer**. The inorganic **layer**, adjacent to the electrode and made of spin cast CdSe **nanocrystals** passivated with either organic groups or with a thin **layer** of **ZnS**, is the emitting **layer**.
The **ZnS** host film in the CL devices, built using chemical vapor deposition, serves as the support medium for the dispersed **nanocrystals**, but also provides additional passivation to the surface of those **nanocrystals**. We find that the **EL** and CL signals almost exclusively originate from the inorganic **nanocrystal** in both cases, i.e., **EL** comes from the **nanocrystal layer** in the heterostructure device while CL is generated from the dispersed particles in the composite film. The external **EL** quantum efficiency, eta **EL**, is not enhanced by the presence of **ZnS** overcoating, opposed to the observed increase in the photoluminescence (PL) quantum yield. However, we

find that the CL emission and its stability are substantially improved by the presence of **ZnS** around the emitting **nanocrystal** cores. These observations reflect a difference in the effects of overcoating on the various luminescence processes. On the one hand, a **ZnS** overlayer is associated with an additional energetic barrier that reduces the efficiency of charge injection into the **nanocrystals** for **EL**. On the other hand, PL and CL processes only benefit from the surface passivation with **ZnS**.

CC A7865K Optical properties of III-V and II-VI semiconductors (thin films/low-dimensional structures); A7855E Photoluminescence in II-VI and III-V semiconductors; A7320D Electron states in low-dimensional structures; A7860F Electroluminescence (condensed matter); A7860H Cathodoluminescence, ionoluminescence (condensed matter); B4260 Electroluminescent devices; B2520D II-VI and III-V semiconductors

CT CADMIUM COMPOUNDS; CATHODOLUMINESCENCE; **ELECTROLUMINESCENCE**; II-VI **SEMICONDUCTORS**; NANOSTRUCTURED MATERIALS; POLYMER FILMS; **SEMICONDUCTOR** QUANTUM DOTS

ST **electroluminescence**; cathodoluminescence; **CdSe nanocrystals**; poly (phenylene vinylene); **molecular layer-by-layer sequential adsorption**; **hole transport layer**; **dispersed nanocrystals**; photoluminescence; quantum yield; **ZnS overlayer**; additional energetic barrier; surface passivation; CdSe; **ZnS**

CHI CdSe int, Cd int, Se int, CdSe bin, Cd bin, Se bin; ZnS int, Zn int, S int, ZnS bin, Zn bin, S bin

ET Cd*Se; Cd sy 2; sy 2; Se sy 2; CdSe; Cd cp; cp; Se cp; S*Zn; ZnS; Zn cp; S cp; Cd*S*Se*Zn; Cd sy 4; sy 4; S sy 4; Se sy 4; Zn sy 4; CdSe-ZnS; Cd; Se; Zn; S

L47 ANSWER 3 OF 4 INSPEC COPYRIGHT 2001 IEE

AN 1998:6076796 INSPEC DN A9824-7860F-004; B9812-4220-009

TI Photoluminescence and **electroluminescence** from copper **doped zinc** sulphide **nanocrystals**/polymer composite.

AU Que, W.; Zhou, Y.; Lam, Y.L.; Chan, Y.C.; Kam, C.H. (Sch. of Electr. & Electron. Eng., Nanyang Technol. Inst., Singapore); Liu, B.; Gan, L.M.; Chew, C.H.; Chua, S.J.; Xu, S.J.; Mendis, F.V.C.

SO Applied Physics Letters (9 Nov. 1998) vol.73, no.19, p.2727-9. 29 refs.
Doc. No.: S0003-6951(98)03544-X
Published by: AIP
Price: CCCC 0003-6951/98/73(19)/2727(3)/$15.00
CODEN: APPLAB ISSN: 0003-6951
SICI: 0003-6951(19981109)73:19L.2727:PEFC;1-F

DT Journal

TC Practical; Experimental

CY United States

LA English

AB Cu-**doped ZnS nanocrystals** were prepared in an inverse microemulsion at room temperature as well as under a hydrothermal condition. X-ray diffraction analysis showed that the diameter of the Cu-**doped ZnS nanocrystals** particles was about 9 nm. These particles showed a strong photoluminescence intensity and a broad emission band from 490 to 530 nm. The half-width of emission was about 60 nm. Cu-**doped ZnS nanocrystals**/polymethylmethacrylate composite as a light-emitting **layer** was used to fabricate a single **layer** structure **electroluminescent** device which had low turn on voltage (less than 5 V). The green light of **electroluminescence** was observed at room temperature. The **electroluminescence** and photoluminescence spectra were nearly identical at room temperature.

CC A7860F Electroluminescence; A6146 Solid clusters (including fullerenes) and nanoparticles; A6480G Microstructure; A7855D Photoluminescence in tetrahedrally bonded nonmetals; A8270K Emulsions and suspensions; A8120T Preparation of reinforced polymers and polymer-based composites; B4220 Luminescent materials; B4260 Electroluminescent devices; B0550 Composite materials (engineering materials science)

CT COPPER; **ELECTROLUMINESCENCE; ELECTROLUMINESCENT** DEVICES; FILLED POLYMERS; II-VI **SEMICONDUCTORS**; MICROEMULSIONS; NANOSTRUCTURED MATERIALS; OPTICAL POLYMERS; PARTICLE SIZE; PHOTOLUMINESCENCE; SPECTRAL LINE BREADTH; SPECTRAL LINE INTENSITY; **ZINC** COMPOUNDS

ST photoluminescence; **electroluminescence; copper doped zinc sulphide nanocrystals/polymer composite; Cu-doped ZnS nanocrystals**; inverse microemulsion; room temperature; hydrothermal condition; X-ray diffraction; strong photoluminescence intensity; broad emission band; half-width; polymethylmethyacrylate composite; **light-emitting layer; single layer structure electroluminescent device**; low turn on voltage; green light; 9 nm; 490 to 530 nm; 5 V; 20 C; **ZnS:Cu**

CHI ZnS:Cu int, ZnS int, Cu int, Zn int, S int, ZnS:Cu ss, Cu ss, Zn ss, S ss, ZnS bin, Zn bin, S bin, Cu el, Cu dop

PHP size 9.0E-09 m; wavelength 4.9E-07 to 5.3E-07 m; voltage 5.0E+00 V; temperature 2.93E+02 K

ET Cu; S*Zn; ZnS; Zn cp; cp; S cp; Cu*S*Zn; Cu sy 3; sy 3; S sy 3; Zn sy 3; ZnS:Cu; Cu doping; doped materials; Zn; S

L47 ANSWER 4 OF 4 INSPEC COPYRIGHT 2001 IEE

AN 1996:5336577 INSPEC DN B9609-4260D-010

TI Fabrication and characteristics of **ZnS nanocrystals** /polymer composite **doped** with tetraphenylbenzidine single **layer** structure light-emitting diode.

AU Yi Yang; Shanhua Xue; Shiyong Liu (Lab. of Nat. Integrated Optoelectron., Jilin Univ., Changchun, China); Jinman Huang; Jiacong Shen

SO Applied Physics Letters (15 July 1996) vol.69, no.3, p.377-9. 24 refs.
Doc. No.: S0003-6951(96)01029-7
Published by: AIP
Price: CCCC 0003-6951/96/69(3)/377/3/$10.00
CODEN: APPLAB ISSN: 0003-6951
SICI: 0003-6951(19960715)69:3L.377:FCNP;1-Y

DT Journal

TC Experimental

CY United States

LA English

AB The hexagonal **ZnS nanocrystals** were synthesized in polymer matrix. The **ZnS** polymer composite **doped** with tetraphenylbenzidine (TPB) as light-emitting **layer** was used to fabricate a single **layer** structure light-emitting diode which has a low turn on voltage such as 2.5 V. The **electroluminescence** spectrum was obtained at room temperature. Owing to the effect that TPB interacted with **ZnS nanocrystal** to form the luminescent center, the emission was peaking at 520 nm which shifts to the lower energy compared with that of **ZnS**, and the half-width of the emission was about 20 nm.

CC B4260D Light emitting diodes

CT **ELECTROLUMINESCENCE**; II-VI **SEMICONDUCTORS**; LIGHT EMITTING DIODES; NANOSTRUCTURED MATERIALS; **SEMICONDUCTOR** QUANTUM DOTS; **ZINC** COMPOUNDS

ST **ZnS nanocrystals/polymer:tetraphenylbenzidine composite; single layer structure light-emitting diode; electroluminescence spectrum**; emission half-width; 2.5 V; 520 nm;

ZnS

CHI ZnS int, Zn int, S int, ZnS bin, Zn bin, S bin
PHP voltage 2.5E+00 V; wavelength 5.2E-07 m
ET S*Zn; ZnS; Zn cp; cp; S cp; Zn; S